

# PURCHASING

JANUARY, 1951

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DETROIT

Cover Photo, O. L. Williamson, see page	71
TABLE OF CONTENTS .....	page 65
"Suppliers' Day" .....	page 72
How Healthy Is Your Vendor? .....	page 79
Buying for Plant Maintenance .....	page 85
Techniques of Purchasing .....	page 94
Office Equipment Section .....	page 165

IR v.301 Jan. - March 1951

# CHASER LIFE DOUBLED

...staining and  
leakage problems  
also solved when  
manufacturer\*

changed to  
**TEXACO Cleartex Cutting Oil**

## JOB DATA

**Part:** Packing nut

**Operations:** Drilling, forming,  
threading, cut-off

**Machine:** 4-spindle Acme Gridley,  
using high-speed tools

**Metal:** 420 stainless steel

The stainless steel used on this job is one of the toughest metals to machine. Operators reported their greatest difficulty was frequent breakage of the threading chasers, none of which lasted more than three shifts (24 hours). In addition, leakage of machine lubricant into the cutting fluid caused contamination and high oil consumption.

At the suggestion of a Texaco Lubrication Engineer, the competitive cutting fluid and machine lubricant were both replaced by *Texaco Cleartex Cutting Oil*. Chasers now last six shifts (48 hours) —double the life! Because *Texaco Cleartex Cutting Oil* is dual-purpose—designed to serve as both cutting fluid and machine lubricant — contamination has been completely overcome and oil consumption

materially reduced.

Still another advantage gained from the change to *Texaco Cleartex Cutting Oil* is that either steel or brass can be worked without changing oils. *Texaco Cleartex Cutting Oil* does not stain.

Let a Texaco Lubrication Engineer—specializing in machining—help you gain similar cost-saving benefits in *your* plant. There is a complete line of Texaco Cutting, Grinding and Soluble Oils to assure better, faster, lower-cost machining, whatever the metal or the method of working it.

Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

\*Name on request

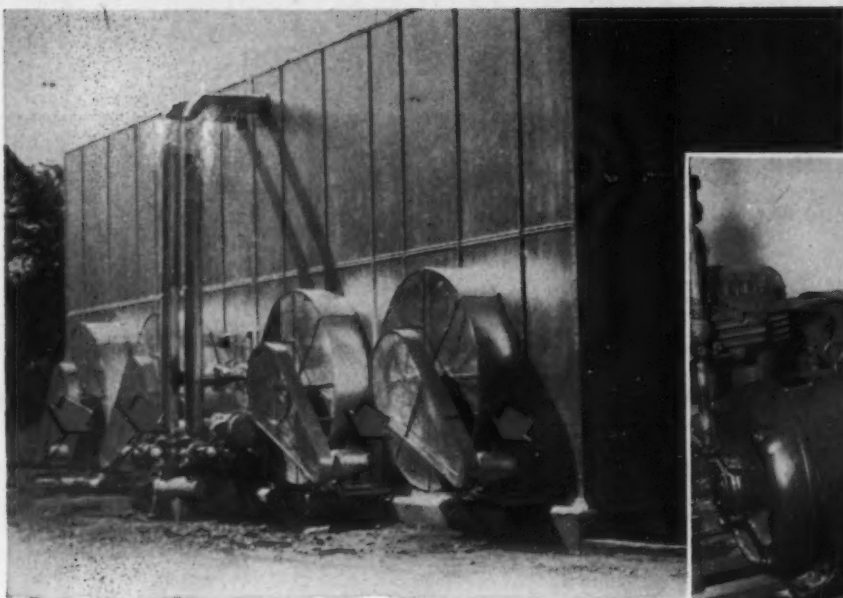


## TEXACO Lubricants, Fuels and Lubrication Engineering Service

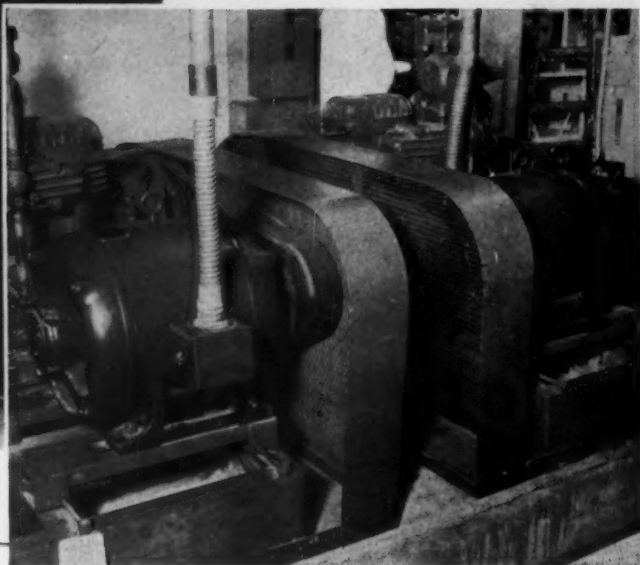
TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night, METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

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Two Century 30 horsepower motors driving refrigeration compressors.

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TYPE SC-  
SQUIRREL CAGE MOTORS



$\frac{1}{8}$  to  $\frac{3}{4}$  horsepower



1 to  $1\frac{1}{2}$  horsepower



2 to 15 horsepower



20 to 125 horsepower



150 to 400 horsepower

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The correct selection of the right combination of motor type, speed, power, torque, frame and mounting keeps Century motors on the job.

Team work between your motorized equipment producers and Century motor engineers means that you always get the right motor—selected from Century's wide range of types and kinds, in sizes from  $\frac{1}{8}$  to 400 horsepower for single or polyphase alternating current and direct current. You can be confident that you get top performance from the fine equipment these motors drive.

Skillful application makes sure that Century motors meet the exacting requirements of the machines they drive. That's your assurance of dependability.

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Offices and Stock Points in Principal Cities

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Specify



for all your electric power requirements

RESEARCH KEEPS

# B.F. Goodrich

FIRST IN RUBBER



## This belt made endless with Plylock Splice, outlasting others 8 to 1

**T**his belt transmits power to a line shaft. It used to be that with ordinary belts they had to be so tight they stretched, wore out fast, broke at the fasteners. Sometimes they lasted only a week. The longest service was only a year.

The B.F. Goodrich man and the local BFG distributor recommended the B.F. Goodrich Multicord transmission belt joined by the Plylock Splice. The belt (shown here) was installed 8 years ago, hasn't been touched for repairs or replacement, hasn't lost a minute of the paper mill's time.

**How Plylock is made**—Belt ends are "stepped down." A small piece of the *second ply* is removed. As ends are fitted together, the outside ply ends are

countersunk into the depression in the second ply. They are held in place by a flexible top layer which is not under tension; and the joint is vulcanized to make it an integral part of the belt—same thickness, flexibility, performance.

**Often triples belt life** because belts are not worn and torn by metal fasteners working out. Plylock uses no fasteners, brads, laces or stitching of any kind. There is no exposed surface to tear apart with flexing and windage.

**Improves operation**—A Plylocked joint is virtually as flexible as the rest of the belt. There is no added thickness at the splice to cause stiffness. Thickness and flexibility—uniform with the rest of the belt—deliver a smooth, even flow of power without

slipping, bumping, noise, vibration.

**Quick replacement**—You can ~~not~~ have endless belts in hours instead of days or weeks. B.F. Goodrich distributors make the Plylock Splice in their own shops or on your machines; or they will show your own mechanics how to make it. *The B.F. Goodrich Company, Industrial and General Products Division, Akron, O.*

*Plylock Belt Joint*

by

**B.F. Goodrich**  
**RUBBER FOR INDUSTRY**

# INLAND DATA for STEEL USERS INLAND STEEL CO.

38 S. Dearborn Street, Chicago 3, Illinois

## The role of Scrap in Steel Making

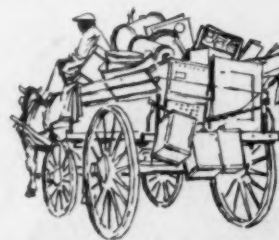
One of the most important raw materials in steelmaking . . . one frequently underrated by the casual observer . . . is iron and steel scrap. With over 90% of all the steel in the U. S. being made by the open hearth process, the scrap used by steel producers totals approximately 50,000,000 tons each year.

The open hearth method of steel production is geared to a pig iron scrap consumption ratio of roughly 50-50. This is to the final advantage of the steel user, since a large scrap diet in steelmaking results in a number of benefits: (a) steel is made faster (since scrap has already been "refined" once before, the "melt" time in the open hearth is decreased); (b) vital raw materials are conserved (it takes almost 4 tons of iron ore, coal and limestone to make a ton of pig iron); (c) unless scrap prices are abnormally high, the price of steel is cheaper; (d) steel is of higher quality (since scrap has already undergone one refining process); (e) transportation facilities, instead of being used for the additional raw materials otherwise required, can be released for other uses; (f) steel mill capacities can be expanded more readily with less emphasis on the blast furnace and more on open hearths and rolling mills.

About two-thirds of the scrap consumed in making steel comes from the steel mills themselves. Crop ends and sheared edges move quickly back to the open hearth shop. The remaining third, flowing to the mills largely through the 6,500 scrap dealers in the U.S., comes from the wastage in metal working plants ("production" scrap), auto graveyards, old building, bridge and ship wrecking projects, railroads (worn rails, freight cars, etc.), neighborhood junk peddlers.

The scrap dealers must sort the scrap so that the undesirables are eliminated, the alloys segregated and the right kinds of scrap can be delivered in large tonnages to the mills for most efficient steelmaking practice.

Today, with steel production at record peaks and with capacity continually expanding, it is more important than ever to keep scrap flowing back to the steel mills from every source. Everyone waiting for steel can help himself by assisting the movement of his scrap through his regular channels.



### THE SCRAP CYCLE



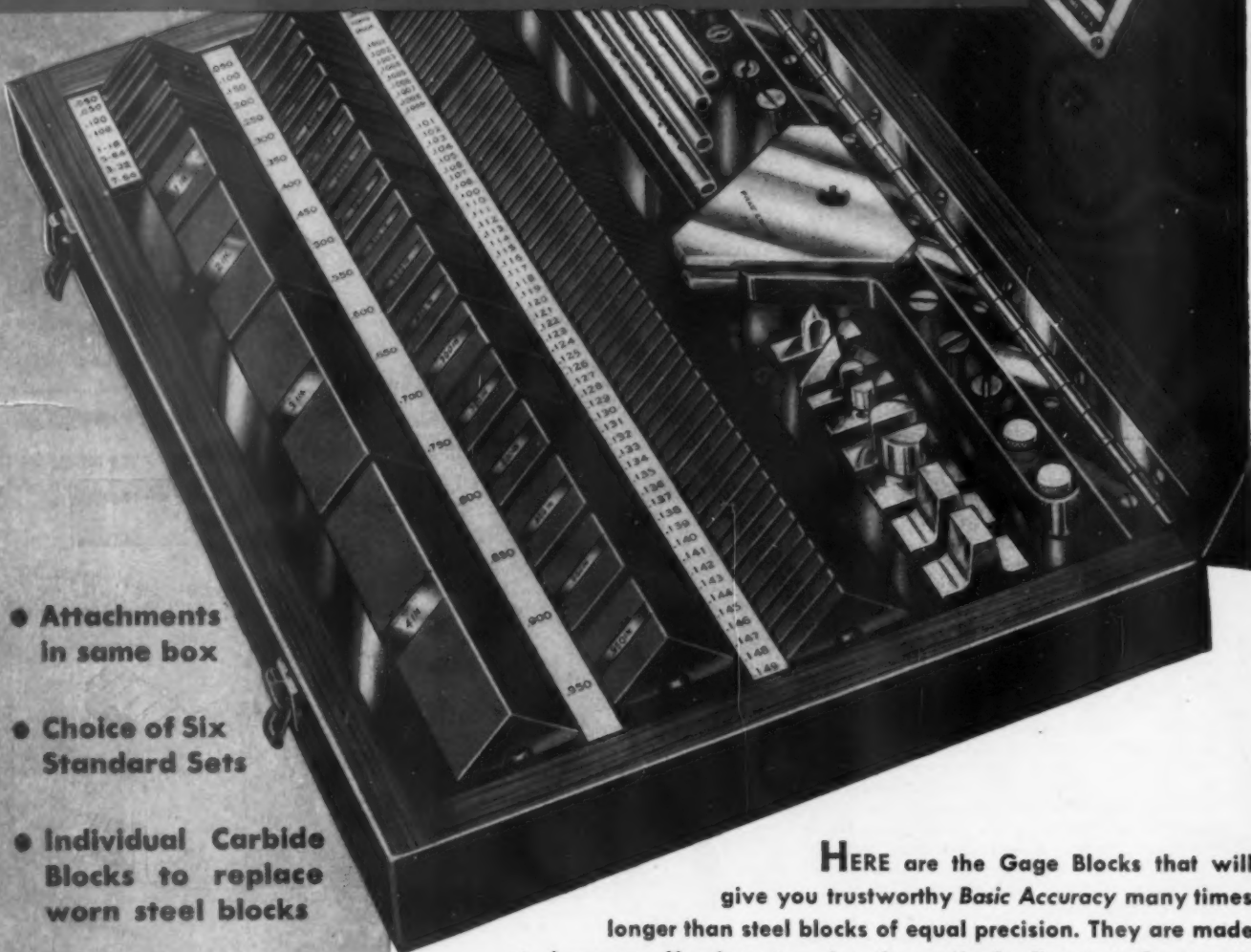


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**HERE** are the Gage Blocks that will give you trustworthy *Basic Accuracy* many times longer than steel blocks of equal precision. They are made at Accuracy Headquarters by the nation's finest craftsmen to guaranteed tolerances of  $+4, -2$  millionths of an inch per inch of length. All P&W Carbide Hoke Blocks — from .050" to 4.000" long — are *Solid Carbide*, made from a grade which we believe offers the best possible combination of these qualities: wear resistance, surface finish, wringing ease and permanent stability. The results are extremely long service life and continuing Accuracy — *plus substantial savings!* Write for circular.

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# You can improve finish and cut costs by brushing

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**T**HE Osborn Brushing Specialist near you has been helping hundreds of manufacturers find ways to improve product finish, speed production, reduce scrap loss, eliminate operations—with the right brushes, correctly used. He'd like to put this experience to work for you!

He will gladly go through your plant and make a study of your finishing, polishing and cleaning operations, and will analyze your

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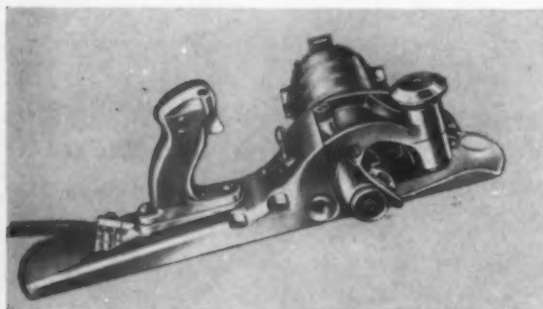
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## with the **STANLEY** **ELECTRIC HAMMER** **No. 310-A**



**No. 166 Drill.** A powerful, high-speed  $\frac{1}{4}$ " hand drill for drilling steel or wood. Sealed-type ball bearings. Universal motor. Weight 5 lbs. Length 8" along chuck line.



**J-5 Power Plane.** Largest, most powerful electric plane on the market. Planes all wood surfaces up to  $2\frac{1}{2}$ " wide. Speed 18,000 r.p.m. 1 h.p. motor.

*More blows per second!* This important advantage of the Stanley 310-A Electric Hammer means speedier drilling and chipping of stone, concrete, brick; chiseling wood; scaling rust; vibrating forms; etc.

At the same time, operators find the 310-A less tiring. Ingenious design features the "free-thrown" plunger (exclusive with Stanley) . . . no direct connection between motor mechanism and plunger. It hammers without the need for pressure on the handle. *Result:* there's no kick-back, less vibration, and virtually no chance of breakdown.

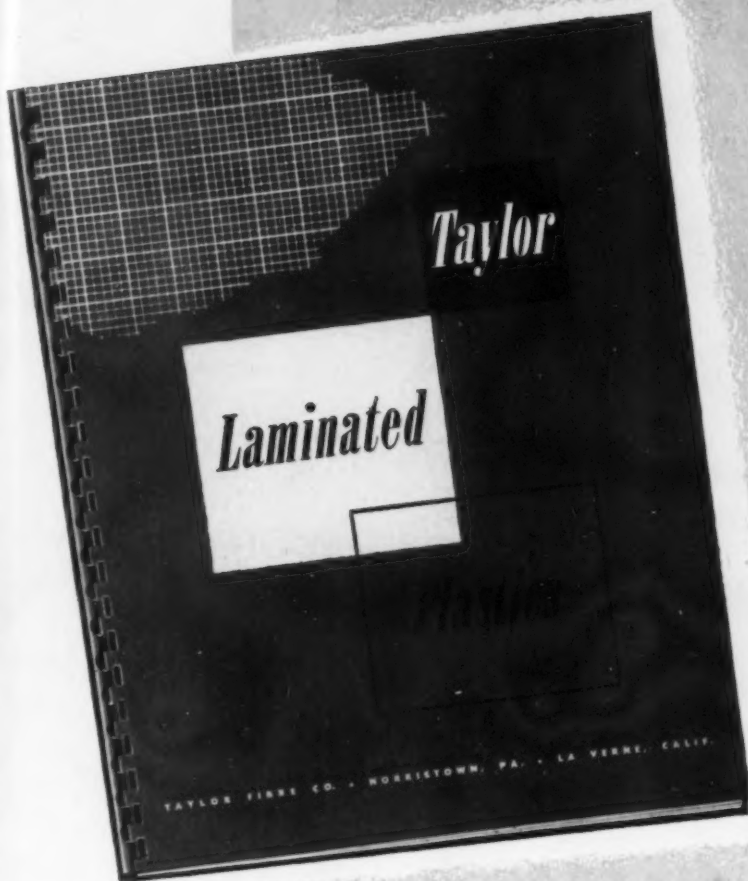
The 310-A is completely self-contained. Does not require such auxiliary equipment as air pump, control box, or converter. Weight is only 13 lbs. Packs in handy steel carrying case. Operates on either A.C. or D.C. lighting circuits. Powerful motor and heavy-duty seal-type ball bearings assure long life. Capacity  $1\frac{1}{8}$ " diameter hole. See the 310-A at your dealer's, or write for detailed literature. Stanley Electric Tools, 485 Myrtle Street, New Britain, Connecticut.

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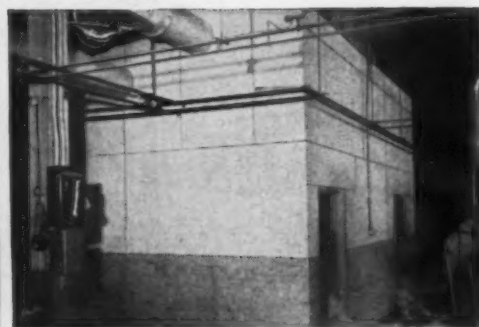


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Two of several wool bins in the Hardwick and Magee Spinning Mill—built with K&M APAC.

**DANGER  
HIGHLY  
COMBUSTIBLE**

## ON GUARD: K&M "Century" APAC

When raw wool or processed wool is stored in bulk, there's danger of fire—not only from external causes, but also from spontaneous combustion. That's one of the reasons the Hardwick and Magee Company, nationally known carpet and rug manufacturers, chose K&M APAC for the construction of these wool bins in their modern spinning mill.

K&M APAC—specially processed sheets of asbestos-cement—resists fire effectively and dependably. The smooth, hard finish of APAC prevents fibrous matter and dust from adhering to the surface—reduces materially the opportunity for fire to spread. And K&M APAC stops the other enemies of raw materials, also—weather, rust, rot, termites, and rodents can't affect it.

You'll like the installation economies you get from using K&M APAC, too. Sheet sections are large (4' x 8') and strong, but not bulky; they handle easily, can be cut and fitted on the job, are quickly

erected. And you save on maintenance costs, too, for K&M APAC doesn't need even paint to preserve its attractive finish.

It will pay you to consider K&M APAC Asbestos-Cement Sheets for such needs as panels, partitions, sheathing, shaft casings, bins, in fact, for all flat surfaces both interior and exterior. APAC can be applied over insulation boards, wood studs, solid wood sheathing, steel or wood girts. It's adaptable and economical—the perfect answer to flat surface covering problems.

**GET THE COMPLETE STORY**—write us for details and the name of your nearest distributor. There's no obligation, of course.

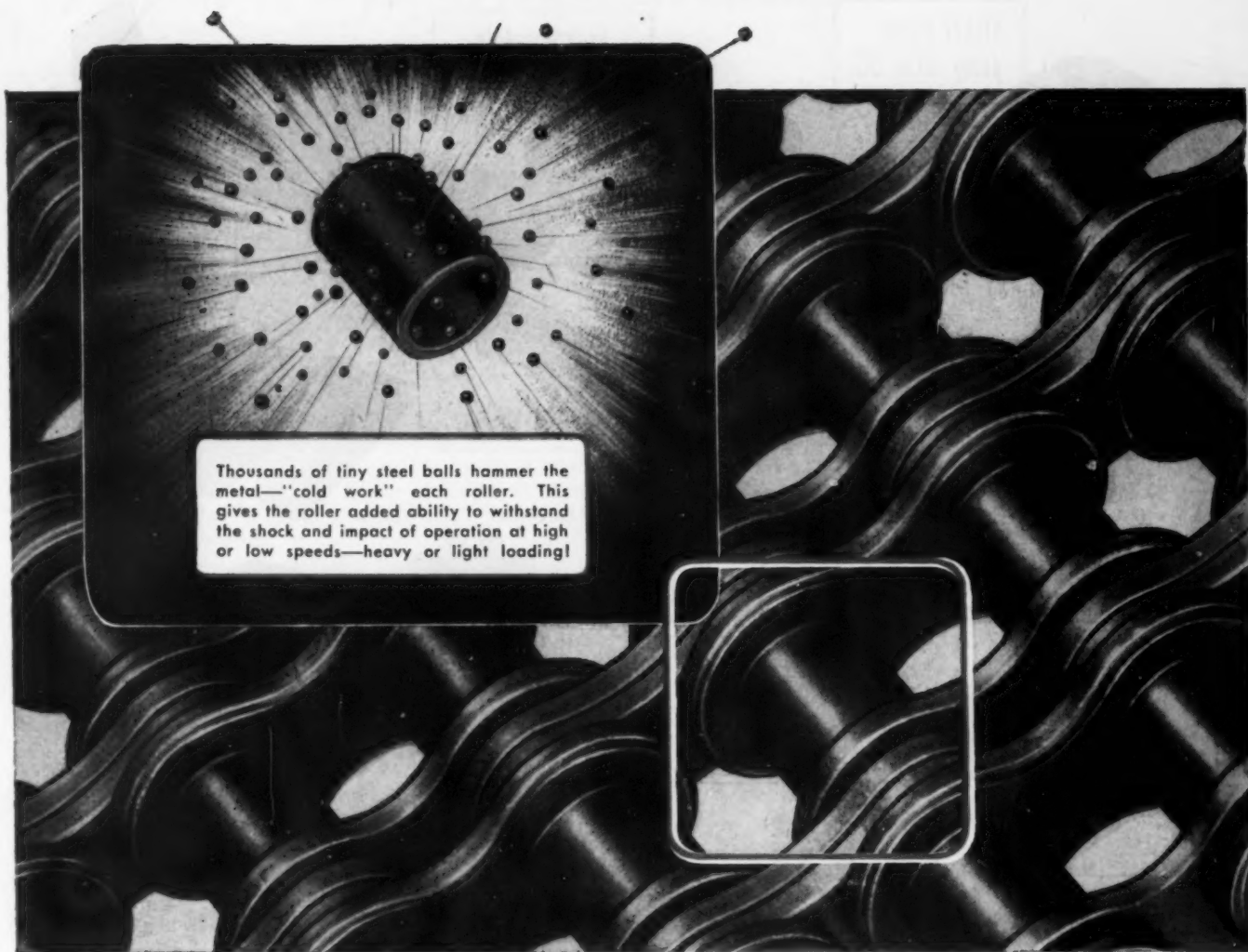
*Nature made Asbestos . . . Keasbey & Mattison has made it serve mankind since 1873*

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# Get the ONE chain with rollers that are **SHOT PEENED**

for **EXTRA** fatigue life!



Thousands of tiny steel balls hammer the metal—"cold work" each roller. This gives the roller added ability to withstand the shock and impact of operation at high or low speeds—heavy or light loading!

## You get this added exclusive in every **LINK-BELT** Roller Chain

You get absolute uniformity, too. No highs. No lows. Just smooth, flowing dependable chains that pay off in wide flexibility—greater performance—longer life.

You see, **LINK-BELT** Roller Chains are made from carefully selected materials with controlled heat treatment to assure uniformity and absence of weak members, then—rollers are shot peened to

give them the extra fatigue life needed for today's higher speeds and heavier loads.

Link-Belt Roller Chain is available in single or multiple widths, in  $\frac{3}{8}$ " to 3" pitch and double pitch. If you have a roller chain problem, see the **LINK-BELT** engineer nearest you.

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 save time, money and machining  
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79

**THE UNITED STATES GRAPHITE COMPANY**  
 DIVISION OF THE WICKES CORPORATION • SAGINAW, MICHIGAN

# PURCHASING PREVIEWS

A WASHINGTON REPORT FOR PURCHASING AGENTS

January 2, 1951.

## SHORTAGES AND CONTROLS TO CONTINUE FOR LONG TIME

Present tensions and uncertainties will continue, and are the best to be hoped for, with the only alternative a full-scale war. This is the opinion of top Government officials, who see no solution to the materials shortages and consequent controls over materials, processing and marketing.

Any lull in battle engagement will be considered as an interlude between further military operations, and the total outlook is for heavy armament program for years to come.

At the same time, the pace of civilian production will have to be maintained at a high rate, primarily to keep employment at the current record levels. That is the significance of the present program of expanding steel and aluminum production, of substantially increasing the number of freight cars, stimulating production of synthetic rubber, and boosting the output of petroleum and petroleum products.

While some of these measures are more in the nature of providing both guns and butter, the basic reason for expansion is the necessity for keeping the expanded labor force employed.

Another important factor is that merely to increase armaments production without specific programs for expanding other essential industrial activities would tend to create an unprecedented demand for luxury items and household goods.

Result would be that all materials not required for the military would be consumed in luxury goods, and there would be little left for industrial expansion and the type of development that strengthens the nation's industrial potential.

## MOBILIZATION TO BE ACCELERATED

Pace of the mobilization will be stepped up very substantially during the second half of this year. Much of the volume military purchases have been in the tooling up stage, and actual production line output takes some time in getting under way.

New Congressional appropriations for military expansion will have a quicker impact on the economy, as the additional purchases will, in many cases, mean substantial increase in the number of units to be delivered on outstanding contracts.

This will require less tooling up in preparation, and will, at the same time, accelerate the trend toward subcontracting for components.

## SHORT-TERM UNEMPLOYMENT DUE IN CONVERSION PERIOD

While the outlook for the second half of the year is for severe shortages of materials, some difficulties of an entirely different nature are expected during the late winter and early spring months until the armaments program gets fully under way.

Just as push-button warfare is unrealistic, so is a smooth transition between civilian production and military mobilization.

Cutbacks in civilian production will result in some unemployment, though not in severe dislocations in the labor force or in the economy.

There will be a strong tendency on the part of employers to hold their labor force together, with the full knowledge that within a limited period of time, the supply of skilled manpower will be short.

This will mean that manufacturers whose production of civilian goods has been cut back through shortages of materials, will tend toward a shortened workweek, rather than prolonged shutdowns.

Where there are layoffs, payment of unemployment compensation claims will maintain consumer purchasing power. Further, the layoffs, where they do occur, will be of short duration.

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No. 960 Crane Brass Pressure  
Regulator for steam or air.  
Literature on request through  
your Crane Branch or  
Crane Wholesaler.

### A CASE HISTORY FROM CRANE FILES

**PROBLEM:** To choose a pressure regulator that would assure a steady, unvarying steam supply to cooking kettle for an exacting brewing process.

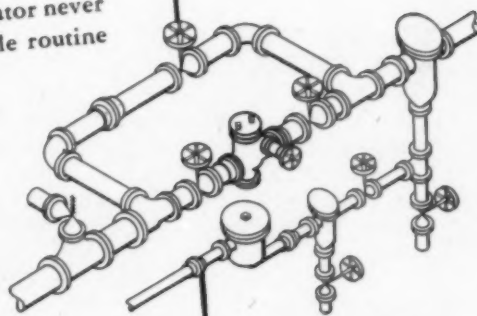
**WORKING CONDITIONS:** Regulator subject to continuous operation 24 hours per day. Main steam supply at 100 psi to be constantly reduced and maintained at 30 psi.

**SOLUTION:** Crane No. 960 Brass Pressure Regulator. (Former model with integral non-renewable cylinder.)

**RESULT:** For 16 years, throughout its lifetime, the Crane 960 Regulator never failed, never faltered, never required more than prescribed simple routine servicing.

Replaced with new Model 960 Crane Pressure Regulator. With all wearing parts renewable, it will virtually never wear out. Now in service 18 months; operating cost: zero.

A typical example of the long life and low-cost maintenance that make Crane Quality the best value in all types of valves. That's why...  
**More CRANE VALVES** are used than any other make



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# ▲PURCHASING PREVIEWS

continued

## P.A.'S PROBLEMS WILL INCREASE

These trends will further complicate the problems of purchasing agents, already faced with a shortage of materials.

The shortened workweek in some plants will mean considerable dislocation in supply of components, as well as in materials. Similarly, the scarcities and dislocations in supply will result in a substantial deviation in types and specifications of materials.

Switch into synthetic rubber is but one example; the scarcity of cobalt for civilian manufactures is another; the shift from scarce non-ferrous metals into plastics—which are likewise due to become scarce—are a few additional examples of problems facing purchasing agents.

## DIFFICULTIES IN MAINTAINING BALANCED INVENTORIES

National Production Authority inventory control regulation is still primarily aimed at holding materials in normal supply to a "practical working minimum", which is liberally interpreted as the "normal" level.

At the same time, in issuing orders covering the scarcer materials, NPA has stipulated specific limitations on inventory levels. This follows World War II inventory control procedures.

Complicating factor in establishing a sound inventory policy is that it is virtually impossible to accumulate a substantial inventory of such basic materials as cold rolled sheet steel, and while it may be possible to pick up quantities of other materials, such acquisition would likely throw the buyer's inventory position out of balance.

If the current trend of mobilization continues, very substantial cutbacks in consumer goods production are likely, through a series of limitation orders. Such cutbacks would further complicate the problems of maintaining a balanced inventory.

## PRICE STABILIZATION STILL UP IN THE AIR

Price picture remains uncertain, with no indication at what point there may be a degree of stabilization.

It appears likely that efforts will be made to stabilize wages at the level created by the so-called fifth round of wage increases, but as this most recent increase is still in the process of working itself out in various segments of industry, it will probably be spring before some clear indication of wage and price levels becomes apparent.

## EXPANSION OF PRODUCTION RAISES OTHER PROBLEMS

The major emphasis on expansion of productive capacity raises a number of problems which industry must take into account.

Spokesmen for the steel industry point out that the projected expansion of steel capacity will likely mean a total output of 110,000,000 tons of steel, or more, by the end of 1952.

This very substantial increase in capacity raises the question of how much steel will be required for defense mobilization after the cutbacks take effect in production of civilian goods; what effect shortages of raw and critical materials will have on expanded production of steel; how much manpower will be available to produce and fabricate steel beyond the present limits of production, and how much steel can the economy spare from current consumption to build new capacity.

Steel industry spokesmen point out that expansion of capacity creates requirements for considerable quantities of other materials—about 1.1 ton of ore for one ton of ingot steel; additional supplies of manganese, chromium, tungsten, nickel and cobalt; increased supplies of steel scrap, limestone, refractories, cinder and scale, fluospar, lime, other fluxes, aluminum, coal and coke.

## DIFFERENCES BETWEEN WORLD WAR II AND NOW

There has been a tendency to compare current developments with some stage of the World II era, with the objective of obtaining some practical index of preparation and control measures necessary to cope with the current emergency phases.

While the mobilization problems in the present emergency and those of World War II are similar, there are some significant differences.

Present capacity for production is much greater than during the initial stages of World War II. Much equipment—basically Navy and Maritime ships and shipping—is usable and will not have to be duplicated. Numerous defense facilities and establishments are likewise usable and do not have to be duplicated.



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**SUNVIS OILS**—Give long, trouble-free service in all types of industrial reservoirs and circulating systems operating at normal temperatures. Sunvis Oils have uniform high viscosity index, low pour point, and low carbon content.

**SUNVIS H.D. 700 OILS**—For internal combustion engines operating under heavy-duty conditions, or where hydraulic valve-lifters are used; for circulating systems and other industrial applications where contamination is a factor. The additives in Sunvis H.D. 700 Oils supply detergency, and minimize oxidation and corrosion.

**SUNVIS 800 OILS**—Special heavy-duty lubricating oils used in railroad diesel engines equipped with silver-alloy bearings.

**SUNVIS 2200 AND SUNVIS 2300**—Heavy-Duty Supplement #1 and Supplement #2 quality oils respectively. For use in diesel engines where high-sulfur fuels may be encountered.

**DYNAVIS OILS**—For internal combustion engines operating at moderate loads and speeds. These low-pour-point, high-viscosity-index, inhibited oils help prevent formation of harmful corrosive and sludge-forming acids.

**CIRCO OILS**—Straight mineral oils for general lubrication of industrial machinery. Unsurpassed for once-through applications, regardless of operating temperatures.

**SUNTAC OILS**—Recommended for general lubrication of all machines subjected to sudden shocks and load reversals. Compounded to increase adhesiveness, Suntac Oils cling to bearing surfaces and supply constant, superior lubrication.

**STEAM CYLINDER OILS**—Lubricants of high flash and fire point for saturated or superheated steam conditions and for worm gear speed-reduction units.

**SUNOCO WAY LUBRICANT**—Eliminates "stick-slip" of tables and scoring of ways. Noncorrosive, with outstanding metalwetting and adhesive properties, ample viscosity and E.P. qualities. Approved by 36 leading machine tool manufacturers.

**ROCK DRILL OIL**—High-film-strength oil for use in jackhammers, stopers, drifters, and similar equipment.

## INDUSTRIAL GREASES



Sun grease increases steel mill production by cutting bearing failures 92%.

**SUN GUN GREASES**—Smooth greases made with medium-viscosity oil. Stable under pressure in power and booster guns.

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**SUN ADHESIVE PRESSURE GREASES**—Won't drip or splash. Excellent lubricants for open-gear applications.

**SUN DARK PRESSURE-SYSTEM GREASES**—For power-driven central grease lubricating systems in heavy industries. Also used as "medium cup greases."

**SUN MINE CAR GREASES**—Available in several grades. Suitable for both antifriction bearings and plain-bearing cavity-type wheels.

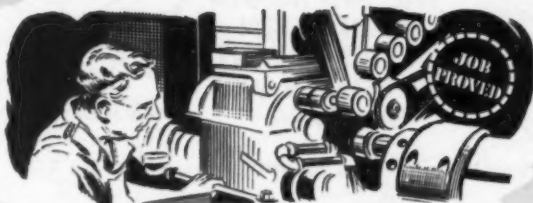
**SUN MINING MACHINE LUBRICANT**—Semifluid. For use where a light but adhesive grease is required. Resists separation and decomposition.

**SUN ROLLER BEARING GREASES**—For use on electric motors and generators and high-temperature machinery equipped with ball or roller bearings.

**SUN GEAR COMPOUNDS**—Black adhesive open-gear compounds and wire-cable greases. Recommended for power presses, mining machinery, worn reduction mills, crushers, pump gears, etc.

**SUNOCO TRACTOR ROLLER COMPOUND**—For crawler-type tractors. Provides good lubrication with exceptional sealing qualities.

## METALWORKING OILS



Ball bearing manufacturer finds that Sunicut increases tool life 15%, eliminates sludging.

**SUNICUT**—Straight (non-emulsifiable) transparent cutting oils. Various grades for automatic screw machines and heavy-duty machining operations. Permit high speed production with excellent finishes, long tool life.

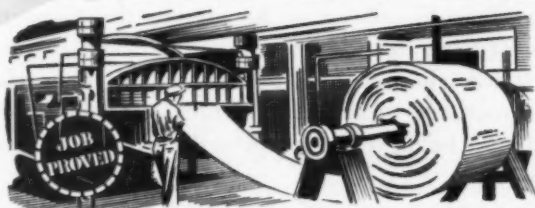
**SUNOCO EMULSIFYING CUTTING OIL**—An emulsifiable oil which produces a stable white emulsion. Efficient and economical cooling and lubricating medium for turning, milling, drilling, and other metalworking operations on both ferrous and nonferrous metals. It is also an excellent grinding coolant. Available in heavy-duty grades too.

**SUN QUENCHING OILS**—Specially refined oils designed to aid development of maximum physical properties in a wide variety of steels.

**SUN TEMPERING OILS**—Specially refined oils for tempering steel. Because of their low carbon content and stability under heat, these oils have an unusually long service life.

**SUN ROLLING OILS**—Straight and emulsifying oils which will permit maximum production in rolling steel, aluminum, brass, and copper.

## RUBBER-PROCESS AIDS



Two Sun rubber-process aids save manufacturer \$6,000 a year by taking the place of five competitive products.

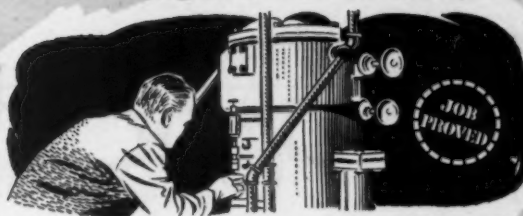
**CIRCOSOL-2XH**—An elasticator and process aid for natural rubber and especially for GR-S. Outstanding for sponge rubber.

**CIRCO LIGHT PROCESS-AID**—A processing agent and excellent softener for natural rubber, natural rubber reclaim, and neoprene synthetic rubber. Used for GR-S to some extent.

**SUNDEX-53**—An inexpensive product suitable for processing GR-S and blends of GR-S and natural rubber. An established process aid for rubber footwear stocks and semihard rubbers.

**CIRCUMAR-5AA**—A dark-colored product for processing natural and GR-S rubber used in tire-making. Also used in reclaiming natural-rubber scrap. Replaces asphalt fluxes. Free-flowing at room temperature.

## REFRIGERATION OILS



Hotel turns to Suniso for its ice-making equipment; eliminates separation troubles, cuts oil costs 20%.

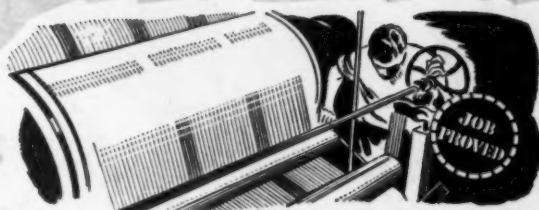
**SUNISO REFRIGERATION OILS**—High-quality oils having extremely low pour points, extremely low wax-separating characteristics, a high degree of stability, and long life. Initially neutral and resistant to formation of detrimental acids. Suniso grades are available to meet all low, normal, and high temperature conditions. The most widely used oils in refrigerating and air-conditioning.

## SUNOCO WAXES

Waxes, "tailor made" to provide the exact properties demanded by different industries, are now available from Sun's new multimillion-dollar wax plant. Revolutionary manufacturing methods make it possible to retain only the wax portions desired for a particular use, while discarding those which might be detrimental.

Sunoco Waxes are precision-controlled for quality and uniformity of all physical and chemical characteristics important to the user. The various grades of Sunoco Wax are recommended on the basis of their ability to give superior performance on the specific job.

## TEXTILE OILS



Sunotex replaces three formula components in textile mill; also saves 25% on costs.

**SUNOTEX TEXTILE-PROCESS AIDS**—Designed to impart desired additional properties to various fibers during their processing from the raw state into a manufactured product. All Sunotex textile-process aids are emulsifiable in water. Highest rating in Fade-Ometer tests.

**SUN COTTON CONDITIONERS**—Processing materials which prevent waste by cutting down excessive amounts of fly (fine air-borne lint particles).

**SUN ASBESTOS FIBER CONDITIONER**—Sprayed on asbestos during processing to keep fibers from being damaged or broken down. Harmful dust is minimized when this product is used.

**SUN CORDAGE OILS**—Generally used alone, but adaptable to various formulas used by cordage manufacturers. Selected products, highly compatible with additives.

**SUNOTEX MACHINE OIL**—One lubricant for nearly every kind of textile machine. A high-quality mineral oil and additive combination which prevents rust, clings to moving parts, and minimizes wear. Scours out of all kinds of fabrics easily and completely.

## ADDITIONAL INDUSTRIAL PRODUCTS

**SUN SOLVENTS**—Sun Spirits for the thinning of paints, varnishes, and enamels, for metal-cleaning, and certain types of processing and extraction ... a pure, water-white petroleum solvent free of corrosive sulfur. Other Sun solvents with special properties are available for the chemical industry.

**SUN LEATHER OILS**—Petroleum-base leather oils. Used for obtaining the desired tensile strength, proper temper, and controlled moisture content. Maintain a light even color, mix well, and distribute evenly.

# INDUSTRIAL PRODUCTS



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**T**HE lathe rotates the work and not the file, of course—as anybody but Pinhead would know. But not every lathe mechanic knows of the existence of a special Nicholson file that works very fast and does a beautiful job of smooth-finishing on spindles, shafts, dowel pins, hubs, gears, rolls — anything, in fact, that can be set up and spun in a lathe.

It's the Nicholson Long Angle Lathe File (also made in Black Diamond brand). Though a regular Mill Bastard will do a good job and is a bit easier to use, this special file, with teeth angle increased from 25° to 45°, has

less tendency to fill up. The chips slide down the longer angle and are forced out at the edge by the "forward" motion of both the file and the work. Consequently, there is less chance of chip-scratches on the surface being smoothed. (A stroking action, under light pressure, should be used to distribute the cutting throughout the file.)

Made in Flat type with "Long Angle" stamped on tang; and sold through industrial supply houses. Unsurpassed Nicholson quality, of course.

**FREE TECHNICAL BOOKLET, "10 Special File Types."** Also, "File Philosophy," Nicholson's famous 48-page illustrated book on kinds, use and care of files. *Free* — as many copies as you need for purchasing and production heads and key mechanics.



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Bring Your Source Information Up-to-date on New and Improved Equipment, Products and Materials. This is the first of — FIVE Pages Listing the Latest Trade Literature! Check All Five — 19, 20, 22, 24 and 166! A special listing of catalogs and bulletins on office equipment and supplies will be found on page 166. Also we will be glad to obtain information for you on any product advertised in this issue. See instructions below.

—When Writing to Manufacturers Direct, Please Mention PURCHASING Magazine.—

☐ **1. TOOL CRIB CONTROLS** — Bulletin A-510 REV describes method for preventing theft and loss of tools, gages, etc., tells how to cut crib inventories, eliminate delays reduce breakage, speed service and cut costs. McCaskey Industrial Controls, 101 W. 31st St., New York 1, N. Y.

☐ **2. COLLAPSIBLE TUBES** — Catalog describes Sheffield Process Tubes for large variety of products, made from pure tin, Sheffield, lead, tin coated and aluminum, and also Vincote inner coated tubes for acid or alkaline products, oils, greases, etc. The Sheffield Tube Corp., 170 Broad St., New London, Conn.

☐ **3. JAW CLAMPS** — Jaw Clamps which offer fast, simple practical way to secure all shapes and sizes of workpieces to machine tools — eliminating U-clamps and straps, are described in folder issued by J & S Tool Co., Inc., 477 Main St., East Orange, N. J.

☐ **4. LUBRICATION** — Standardized lubrication systems for centralized mass lubrication — full automatic control, semi-automatic control, and manual systems for controlled applications, and fittings, drum pumps and guns, are subject of bulletin. Lincoln Lubricating Equipment, 5701 Natural Bridge Ave., St. Louis 20, Mo.

☐ **5. HYDRAULIC FLUID** — Hydraulic Fluid F-9, non-flammable, developed primarily for use in die casting machines, hydroelectric

turbines, glass drawing machinery, hydraulic presses, etc., having good lubricity and pumping characteristics, is described in Technical Bulletin O-D 602, Organic Chemicals Divn., Monsanto Chemical Co., St. Louis 4, Mo.

☐ **6. MATERIALS HANDLING** — New bulletin No. 28 deals with equipment for vertical movement in both storage and production operations, such as stackers, handy hoisters, portable cranes and working height lifters. Lewis-Sheppard Products Inc., 258 Walnut St., Watertown 72, Mass.

☐ **7. GLASS** — "Glass and You" is title of booklet which illustrates

countless ways glass is being used in industry and home today. Corning Glass Works, Dept. P-10, Corning, N. Y.

☐ **8. MULTI-V-DRIVES** — Bulletin V1300B7F details Multi-V-Drives which are easy to get on and easy to get off, yet always tight on the shafts. Worthington Pump & Mchy. Corp., Multi-V-Drive Sales Divn., Buffalo, N. Y.

☐ **9. GEAR GAGE** — Booklet details the Conju-Gage for accurate, less expensive testing of gears. With single worm section you can make composite test — runout, base pitch error, tooth thickness, profile error and lateral runout, all in one operation. Eastman Kodak Co., Industrial Optical Sales Divn., Rochester 4, N. Y.

☐ **10. RUBBER DATA** — Rubber Data booklet covers such subjects as AMS specifications, products manufactured, properties of natural and synthetic rubbers, general properties of various rubber compounds, methods of molding, etc. Acushnet Process Co., New Bedford, Mass.

☐ **11. DRILL PRESSES** — New brochure covers Series 1600 light duty drill presses which includes 12 models in 1, 2, 3 and 4 spindle units, bench and floor type, with data on assembly parts for special set-ups, tapping machines, and accessories. Bolce-Crane Co., 953 Central Ave., Toledo 6, Ohio.

(Please turn to page 20)

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### READER SERVICE

All listings include names and addresses of manufacturers.

However, each one is numbered. If you want to save multiple-letter writing, just jot down the numbers of the items you want and month of issue, and list them in a letter on your COMPANY letterhead to

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PURCHASING Magazine  
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New York 17, N. Y.

NOTE: This service also applies to New Products, Equipment and Supplies reported in the

New Products Section  
Pages 130-164

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(Continued from page 19)

**12. FASTENING SPECIALTIES**

—Brochure describes complete line of fastening specialties designed to offer installed economy in both metal-to-metal and metal-to-wood applications. These include blind rivets, anchor nuts, screw fasteners, adjustable pawl fasteners, and door retaining springs. South Chester Corp., 1418 So. Penn Square, Philadelphia 2, Pa.

**13. WATER SOFTENING**

—Publication 4505 illustrates and describes water softening apparatus for small boiler and industrial plants, etc., where relatively small quantities (less than 100 gal. per minute) are required. Two groups of sizes are offered. Cochran Corp., 17th St. & Allegheny Ave., Philadelphia 32, Pa.

**14. GEON POLYVINYL MATERIALS**

—16-page illustrated manual describes the properties, application, compounding and processing of Geon materials with particular emphasis on many products which can be made from them—hose, gaskets, wire and cable insulation, flooring, film and sheeting, plating baskets, work gloves, etc., etc. B. F. Goodrich Chemical Co., Rose Building, Cleveland, Ohio.

**15. NEW FASTENER**

—Bulletin illustrates and describes Keps, patented pre-assembled nut and Shakeproof lock washer, which enables locking of nuts without separate lock washer handling operation. They are available in American Standard light nut series, A. S. machine screw nut series, and A. S. regular nut series. Application suggestions are illustrated. Shakeproof Inc., Division of Illinois Tool Works, 2501 North Keeler Ave., Chicago, Ill. In Canada, Canada Illinois Tool Ltd., Toronto.

**16. COFFEE BAR**

—Bulletin describes coffee bar for plant use. Each cup is freshly made. Served black or with cream or sugar or both, at 5c per cup. Unit has automatic change maker, and is 69" high, 26" wide, 21" deep. Installation requirements are 110-120 v, ac 60 c electrical outlet, and a water connection. The Bert Mills Corp., 400 Crescent Blvd., Lombard, Ill.

**17. PALLET BOXES**

—A 12-page brochure shows what Wire-

**LATEST TRADE LITERATURE**

(This is Page 20)

**Check Over All Five Pages!**

19, 20, 22, 24 and 166.

Write manufacturers direct, (mentioning **PURCHASING Magazine** please); Or, let us have a short letter on your Company letterhead listing numbers of items you want and month of issue.

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bound Pallet boxes can do to help reduce material handling costs. It also shows how the problem of storage of stock items can be whipped without storage bins. General Box Co., 48 West Illinois St., Chicago, Ill.

**18. KEL-F COATINGS**

—Technical bulletin 4-10-50 p.1 describes Kel-F (trifluorochloroethylene polymer) dispersions N-1 and NW-25, which make it possible to apply Kel-F to materials and equipment not amenable to coating by conventional plastic molding. It describes the properties of these non-aqueous dispersions and means for applying them. Application is by spraying, dipping or brushing. Chemical Manufacturing Division, The M. W. Kellogg Co., P. O. Box 469, Jersey City 3, N. J.

**19. DIESEL ENGINE**

—Bulletin 321 details Series 600 Diesel engine for stationary service; multi-cylinder, four-cycle, solid injection. Engines have 12¾" bore, 15½" stroke, and a speed range from 360 to 625 rpm. Bulletin includes design features and specifications, performance curves, and ratings, which range from 430 to 1500 hp. The Baldwin Locomotive Works, Philadelphia 42, Pa.

**20. VIBRATING SCREENS**

—"CA" concentric action vibrating screens for medium and heavy duty service, accurate sizing, through rinsing and rapid dewatering of a wide range of materials from ashes to zinc ore, are illustrated, described and tabulated in Book No. 2354. Link-Belt Co., 307 No. Michigan Ave., Chicago, Ill.

**21. SEAMLESS ALLOY STEEL TUBING**

—Technical data card TDC 136 details chemical composition of seamless alloy steel tubing—B&W Croloy steel of the low and intermediate groups. These apply to pipe for high temperature service and tubing for use in heat exchangers, condensers, refinery stills, boilers and superheaters. The Babcock & Wilcox Tube Co., Beaver Falls, Pa.

**22. SUBSTATIONS**

—Substations built up from standardized components for rural distribution are described in 12-page booklet "Westinghouse Standardized Substations for Rural Distribution Systems" (B-4697). Combinations of the various parts described in the booklet cover over 95% of all rural substation requirements. Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa.

**23. INDUCTION HEATING FURNACE**

—Six-page illustrated bulletin details low-frequency (60-cycle) induction heating furnace. Advantages and applications in the aluminum and other non-ferrous industries for extrusion, rolling, piercing, forging and annealing are described. Magnethermic Corp., 701 Andrews Ave., Youngstown, Ohio.

**24. 4" BORING MILL TOOLS**

—Bulletin 50-11 covers Quick Change Holders and gives list of tools comprising a typical set for a 4" horizontal boring mill. Tools listed will handle approximately 90% of average type of work encountered for these machines. Tool catalog also available. Beaver Tool & Engineering Corp., 2850 Rochester Road, Royal Oak, Mich.

**25. PRESSURE SEALING ZIPPER**

—Pressure Sealing Zipper, a unique arrangement of overlapping rubber lips on slide fasteners, providing an effective and complete seal against gases and liquids ranging from zero pressure to the structural strength of the particular fastener used, is detailed in 8-page bulletin. Detailed drawings show the six styles in which zippers are made, accompanied by installation procedures. B. F. Goodrich Co., Akron, Ohio.

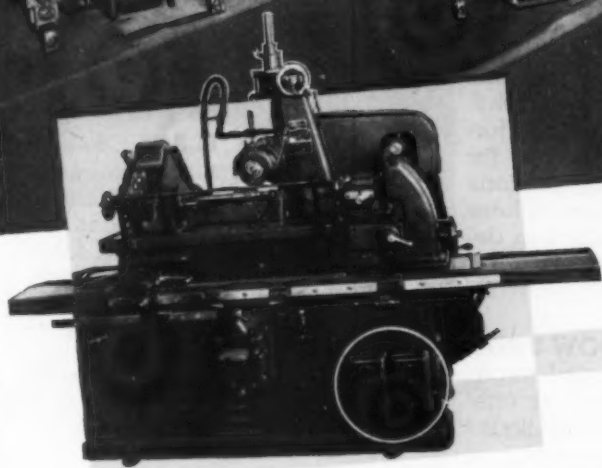
**26. UNIVERSAL JOINTS**

—Bulletin C1 illustrates and describes Curtis universal joints. One page

(Please turn to page 22)



# DESIGN LEADERSHIP



## SQUARE D MOTOR STARTERS

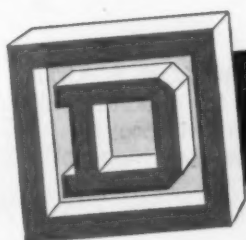
**SQUARE D's DESIGN LEADERSHIP**  
is reflected in important features:

- Generous wiring space . . . simple contact change . . . easy coil removal . . . additional

electrical interlocks . . . long life . . . NEMA standardization . . . simplified maintenance. These are features which add up to an ever-increasing preference for Square D motor starters.

*Write for BULLETIN 8536. Square D Company, 4041 N. Richards Street, Milwaukee 12, Wisconsin*

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SQUARE D COMPANY CANADA LTD., TORONTO • SQUARE D de MEXICO, S.A., MEXICO CITY, D.F.

(Continued from page 20)

is devoted to purchasing and engineering data. Bulletin is accompanied by list of universal joint applications. Curtis Universal Joint Co., Inc., Springfield 7, Mass.

**□ 27. CONTROL INSTRUMENTS**

—New condensed catalog presents selection of indicators, controllers and combustion safeguards. It is accompanied by 4-page price list applying to nearly all of the standard instruments made by Wheelco Instruments Co., Chicago 7, Ill.

**□ 28. CONDENSER CIRCULATORS**

—Condenser circulators, in standard sizes to 100,000 gpm, and in special sizes to 200,000 gpm are illustrated and described in Catalog G-1050. Designed for power station service, the pumps described are vertical, mixed-flow units of large capacity and low head. New "pull-out" type units are also shown in the catalog. These permit removal of all operating parts without pulling out the complete pump or disturbing connections. Economy Pumps, Inc., Div. of Hamilton-Thomas Corp., Hamilton, Ohio.

**□ 29. WELDING TORCHES**

—36-page illustrated catalog ADC-702 details complete line of welding and cutting torches, outfits, tips and accessories. Charts show correlation of tip, mixer, extension and torch and contain complete data for each component. Air Reduction Co., 60 E. 42nd St., New York 17, N. Y.

**□ 30. PALLET TRUCKS**

—Heavy duty hand pallet trucks in capacities of 4000 lbs. and 6000 lbs., with illustrations of on-the-job applications, are subject of bulletin 222 issued by Lyon-Raymond Corp., Greene, N. Y.

**□ 31. DIPPING BASKETS**

—Selection of right material for dipping baskets used in cleaning, plating, etching, bright dipping and de-oxidizing cycles is made simple by table in Bulletin D-107. Tables also cover wide range of materials, meshes and sizes of wire for standard baskets. Hanson-Van Winkle-Munning Co., Matawan, N. J.

**□ 32. LAMINATED PLASTICS**

—Machining — "Practical Methods of Machining Synthane Laminated Plastics" is title of illustrated book-

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## LATEST TRADE LITERATURE

(This is Page 22)

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let designed to help users of laminated plastics produce finished parts most economically. It contains more than 4 pages of information on design and machining techniques, with emphasis on economy, efficiency and precision. Synthane Corporation, Oaks, Pa.

**□ 33. ATMOSPHERE FURNACES**

—Bulletin shows five different rated atmosphere furnaces, including the Balco, Char-Mo, Amotrol, Vertical and Horizontal Muffle Furnace, and the Muffle furnace with cooling chamber for atmosphere brazing. Applications to modern, controlled atmosphere heat treating are described in detail. Surface Combustion Corp., Toledo 1, Ohio.

**□ 34. MACHINE WINDOW UNITS**

—Bulletin 4D shows varied applications of Window Unit, a one-piece window to indicate liquid level, flow, drip or movement of internal parts. Unit is flush-mounted by simple press fit. Bijur Lubricating Corp., 151 West Passaic St., Rochelle Park, N. J.

**□ 35. INERT ARC WELDING**

—Eight-page illustrated bulletin covers inert-arc welding — the gas shielded arc welding process using helium or argon—describing the process and its applications. Metal & Thermit Corp., 100 East 42nd St., New York, N. Y.

**□ 36. TRANSMISSION BELTING**

—Technical bulletin 3678 on flat transmission belting designed to help select the right belt for individual problems, contains com-

plete formulae, charts and tables. Thermoid Co., Trenton, N. J.

**□ 37. SWITCHGEAR**—Indoor and outdoor switchgear for better protection and flexible control of power and distribution circuits, entitled Allis-Chalmers Switchgear, No. 18B6185A, is available from Allis-Chalmers Mfg. Co., 923 S. 70th St., Milwaukee, Wis.

**□ 38. CRANEMOBILE** — The CraneMobile is the subject of 24 page bulletin featuring machine design and job applications through the use of 74 illustrations. The machine is available in 20 and 25 ton capacity. Specially designed CraneMobile Carrier is available in five models—6 x 4 and 6 x 6 drive with 8 and 9 ft. overall width. Bay City Shovels, Inc., Bay City, Mich.

**□ 39. TANK COATING** — Carbokote 6020, new protective coating for lining steel and wood tanks and covering floors is subject of special release. Brushes on. Hardens at room temperature. Three brush-on coats provide a lining .036" thick, which is said to be proof against a 30,000 volt spark test, and resists most solvents, acids and alkalis up to 350 deg. F. Carboline Co., 7603 Forsyth Blvd., St. Louis 5, Mo.

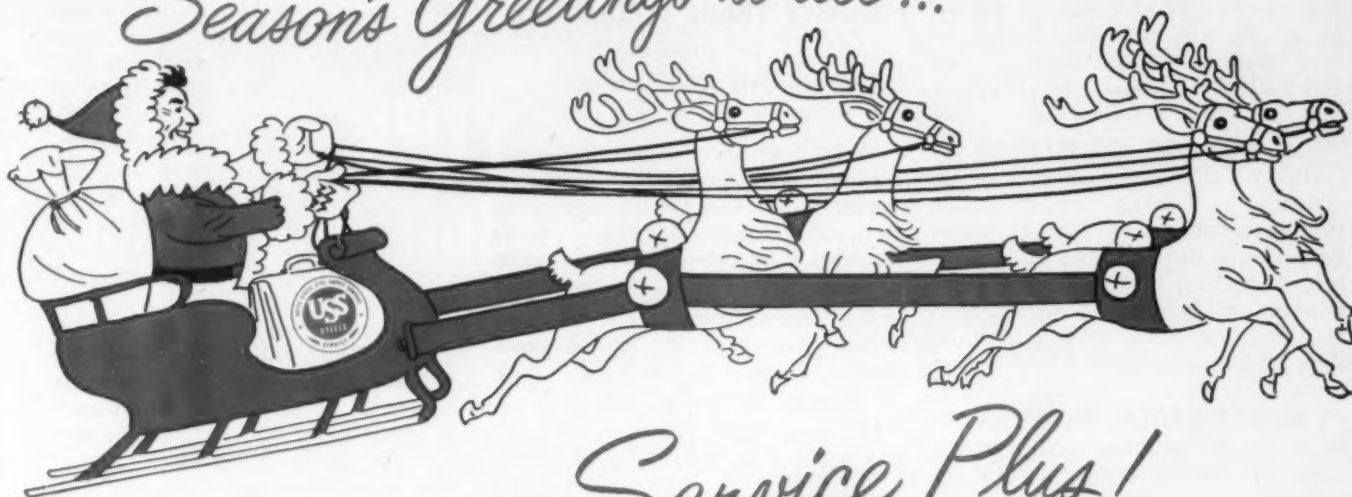
**□ 40. INSUROK PLASTICS**—Bulletin describes Insurok laminated and molded plastics products. Page on laminated includes description of available forms, fabricated parts, gear stock, bearings, and post-formed laminated. Molded products are discussed as to types of material, fillers, and methods of production. The Richardson Co., 2762 Lake St., Melrose Park, Ill.

**□ 41. CORROSION PROOFING**—Technical Bulletin 012 covers Prufcoat Metal Reactive Primer P-10, new metal-treating formulation which (together with Prufcoat Protective coatings) provides two-step system for corrosion-proofing old or moist metal surfaces. Questions and Answers section is informative. Prufcoat Laboratories, Inc., 63 Main St., Cambridge, Mass.

**□ 42. NYLON PLASTIC** — Nylon Plastic for Mechanical Parts, for economy, improved performance in gears, bearings and other moving parts, is subject of Plastics

(Please turn to page 24)

*Season's Greetings to all...*



*and to all, Service Plus!*



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"1951 is going to put service to a severe test. Limitations which are industry-wide and beyond our control, will definitely effect service on critical steel products. Rest assured that reliable steel suppliers will not make rash promises that cannot be fulfilled.

"My full-time job during 1951 will be to serve you in every way possible. I will do my best to supply you with the steel you need, offer you substitutes when they are practical, and place at your disposal the services of our product technicians and metallurgical division.

"In other words, when you need help in 1951, I'm your man. I hope you will use me."

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UNITED STATES STEEL



(Continued from page 22)

Bulletin No. 47, Volume 12, issued by Polychemicals Department of E. I. duPont de Nemours & Co., 350 Fifth Ave., New York, N. Y.

□ **43. CUT-OUT COUPLINGS** — Catalog 50A introduces line of cut-out couplings which offer torque sensitive protection combined with the features of a flexible coupling. It also covers new cut-out pulley line. Anchor Steel & Conveyor Co., 6906 Kingsley Ave., Dearborn, Mich.

□ **44. HYDRAULIC SYSTEMS** — Facts on oil maintenance, instructions for cleaning systems, tips on oil-testing and draining are presented in 18-page booklet "Doing Right by Your Hydraulic System" which includes trouble shooting charts. Copies available for distribution to maintenance personnel. Sun Oil Co., 1608 Walnut St., Philadelphia, Pa.

□ **45. VERTICAL LIFT CONVEYOR** — The Standard Recordlift, a vertical lift conveyor designed to distribute mail, records, files and general office supplies is described in bulletin 150. Operator places material in container, and dispatches container to proper floor by pressing push button. Standard Conveyor Co., No. St. Paul 9, Minn.

□ **46. GAP PRESSES** — Single-crank, open back inclinable and gap presses, 10 to 200 tons capacity, for stamping, drawing, blanking, coining and embossing, are the subject of Bulletin 1000 issued by Columbia Machinery & Engineering Corp., Hamilton, Ohio.

□ **47. HOISTS** — New 16-page bulletin (76-X) describes single drum, multi-purpose hoists for industrial plants, oil fields, mines, etc. Capacities 500 to 3500 pounds; driven by Turbinair, Pistonair, electric, or gasoline engines. Bulletin contains selection chart. Joy Manufacturing Co., Oliver Bldg., Pittsburgh 22, Pa.

□ **48. DRILLHEADS** — Four-page folder covers 33 different types of drillheads; gear driven and full ball bearing universal joint types are detailed. Data includes drill capacities from #60 to 1½" steel, range of adjustments from 1" to 14.2", weights, speeds, etc. Thriftmaster Products Corp., 1026 North Plum St., Lancaster, Pa.

## LATEST TRADE LITERATURE

(This is Page 24)

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□ **49. PORTABLE GAS TORCH** — Bulletin 1070 details portable gas torches. Operate with compressed air at 40 lbs. psi or more; burn manufactured, mixed, natural, propane or butane gas. Built without coils, torch requires no preheating or preliminary warming to start. Hauck Mfg. Co., 124 10th St., Brooklyn 15, N. Y.

□ **50. PLASTIC PIPE** — Series of five four-page, illustrated catalogs, cover Carlon "E", "EF" and "T" plastic pipe, and "C" plastic tubing, and general brochure. The latter tells about six types of flexible and rigid plastic pipe and tubing for wide variety of applications, from drainage and sewage handling to the transmission of hydrofluoric acid. Carlon Products Corp., 10333 Meech Avenue, Cleveland, Ohio.

□ **51. SHIPPING ROOM EQPT.** — How to save time and money in twelve important shipping room operations, and the availability of thirty machines therefor, are subject of new Bostitch bulletin. Equipment includes stitching and stapling machines, machines for bottoming work, sealers, hand staplers, staple removers, etc. Bostitch, Westerly, R. I.

□ **52. ASH & FLYASH SYSTEMS** — Hydraulic and pneumatic ash and flyash handling systems are subject of 24-page booklet, which is compiled in question and answer form. Elements and advantages of various systems and disposal schemes are discussed. Schematic drawings and diagrams are included. Beaumont Birch Co., 1505 Race St., Philadelphia, Pa.

□ **53. DISCONNECTING SWITCHES** — Complete line of indoor and outdoor air-disconnecting switches is described in eight-page booklet B-4726, which gives highlights on design and operation, and application information. Switches include five outdoor types and two indoor types. Hookstick operated switches (outdoor and indoor) are included. Westinghouse Electric Corp., P. O., Box 2099, Pittsburgh 30, Pa.

□ **54. ANTI-CORROSION** — Eight-page technical bulletin describes Zincilate, a one-coat, self-protecting, anti-corrosion coating. It presents case histories and tells of typical applications; also, methods of application. Industrial Metal Protectives, Inc., 401 Homestead Ave., Dayton 8, Ohio.

□ **55. TUNGSTEN ELECTRODES** — Bulletin 1.102-1 covers "Fansteel Tungsten Electrodes for Inert Gas Welding". It lists standard diameters and lengths in which electrodes are supplied, and contains seven practical suggestions for longer electrode life, better welds and lower costs. Fansteel Metallurgical Corp., North Chicago, Ill.

□ **56. PALMETTO PACKINGS** — New well illustrated 20-page catalog No. 101 combines bulletin material on Palmetto packings, and includes the new Pisto-Ring packing for liquid pistons on inside-packed pumps. Self-lubricating, molded and sheet packings, standard and special, are detailed. Ordering information is provided by descriptive tables on sizes, weights, lengths, packaging, etc. Greene, Tweed & Co., North Wales, Pa.

□ **57. GRINDING MACHINES** — 22-page catalog uses 38 pictures and line drawings to illustrate modern design features of 10"-14" Type CH plain hydraulic cylindrical grinding machines. Sections describe semi-automatic operation and angular wheel base grinding. Landis Tool Co., Waukesha, Pa.

□ **58. UNDERFEED OILERS** — Catalog sheet No. 32 describes shatterproof under-feed oilers for lubricating bearings and shafts requiring a very small amount of oil. Available in 1, 2 and 4 oz. capacities. Trico Fuse Mfg. Co., 2948 No. 5th St., Milwaukee 12, Wis.

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wire rope  
selection?



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for each job!

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*the thousand and one wire ropes*  
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Manufacturers of Monarch Whyte Strand PREformed, Internally Lubricated  
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<b>F. N. MANROSS AND SONS CO.</b> BRISTOL, CONNECTICUT	<b>OHIO DIVISION</b> 1712 EAST FIRST ST. DAYTON, OHIO	<b>DUNBAR BROTHERS COMPANY</b> BRISTOL, CONN.	<b>MILWAUKEE DIVISION</b> 341 E. ERIE ST. MILWAUKEE, WIS.	<b>THE WALLACE BARNES COMPANY LTD.</b> HAMILTON, ONT., CANADA

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ASSOCIATED SPRING CORPORATION  
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**This H & D corrugated display box makes  
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The customer is "just looking for a fork to roast hot dogs"—until she spies this gay yellow and black display, with its clever Hamburgergrill and its Cube Steak Broiler. Then her picnic menu suddenly expands beyond "just wieners"—and sales figures expand beyond "just forks for roasting hot dogs."

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**GATES, GLOBES, ANGLES, CHECKS**  
There's this long line to choose from...

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$\frac{1}{8}$ -inch to 3-inches  
125S, 150S, 200S,  
300S, 350S, 300A,  
200, 400, 2000 &  
2500WOG.

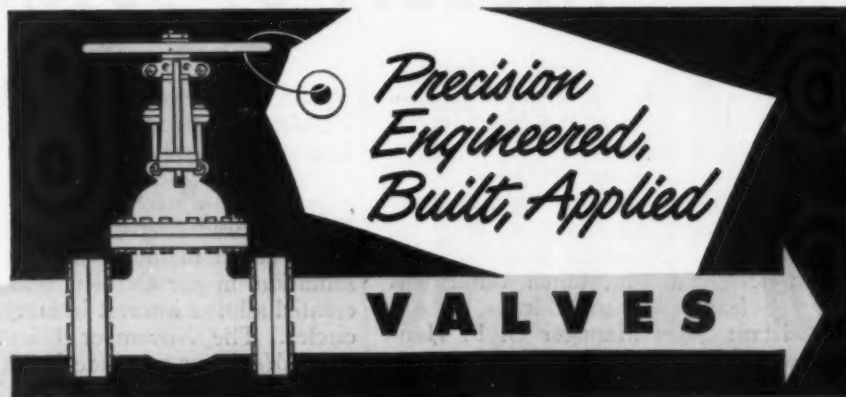


## IRON

$1\frac{1}{4}$ -inch to 16-inches  
125S, 150S, 250S,  
175, 200, 400 & 500 WOG.  
CLIP GATES— $\frac{1}{4}$ -inch to 4-inches.



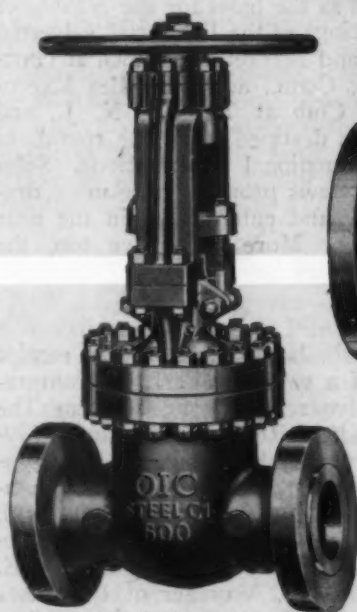
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**CAST STEEL**

**FORGED STEEL**

1/4-inch to 2-inches  
600 primary pressure series.



2 inches to 16 inches  
150, 300 and 600 primary pressure series.

Screwed, flanged, butt weld and socket weld ends . . . rising and non-rising stems . . . outside screw and yoke . . . alloy metal seats, discs and wedges, composition discs . . . union, inside screw and bolted bonnet . . . tapered and parallel seat wedges.

If you're needing valve application know-how, call the nearby OIC distributor or write direct to us. The Ohio Injector Company, Wadsworth, Ohio.



# VALVES

FORGED AND CAST STEEL • IRON • BRONZE



**Baldwin-Hill's No. 1 Insulating Cement**, made of Black Rockwool, is a remarkably economical product... In actual use its dry coverage, one inch thick, is approximately fifty square feet per 100 pounds

**RUST-RESISTANT**  
**HIGHLY ADHESIVE**  
**EFFECTIVE TO 1800° F**  
**NEW TO YOU?**

**BALDWIN-HILL COMPANY**  
404 BREUNIG AVE. TRENTON 2, NEW JERSEY

# F.O.B.



## FILOSOFY OF BUYING

**P**URCHASING men get a lot of information at the monthly Association meetings. For instance, did you know that the residents of Wilmington, Delaware, annually open about five times as many tin cans as the average American citizen? That educational tidbit was the feature of an address by Assistant Sales Manager G. F. Henschel of American Can Company's Atlantic Division, at the Wilmington Association's October meeting, according to the report published in the *Wilmington Journal*. The reporter adds: "The statistics were part of a plea by the speaker for wide dissemination of facts about industry, especially during the periods of controls made necessary by the Korean crisis and national rearmament."

Professor of Economics. There's a lot of good logic in that combination, too.

**T**HE Purchasing Opinion Survey on visual methods of sales presentation, in our October issue, has created a lot of interest in marketing circles. The November 1 issue of *Sales Management* made it the subject of an editorial, entitled "Too Much Talk". The Industrial Products Division of Sun Oil Company quoted the survey in a letter to its salesmen, under the heading, "PAs come from Missouri—To sell them, show them"; besides calling attention to visual methods already in the sales kit, it was the occasion for announcing a new demonstration device to be introduced at a forthcoming sales meeting. The survey was used as the basis for the November meetings of the Industrial Advertising and Marketing Council at Hartford, Conn., and the Sales Executive Club at Trenton, N. J., and seems destined to go the rounds of these national organizations. Sales interviews promise to be more dramatic and entertaining in the near future. More persuasive too, the marketers hope.

**B**UT the one that really made the headlines was the Toronto meeting addressed by Chemist Douglas Welington of Canadian Industries, Ltd. The UP wire service picked up the story, and the clippings have come back to us from such divergent points as Pasadena, Cal., Pocatello, Idaho, and Shreveport, La. Dr. Welington's contribution was the scientific thesis that kissing originated as a simple exercise in chemistry. "It started over a craving for salt—not love," he said. "The cave men discovered that salt helped cool them in the hot summer. So, just as cows get salt by licking each other's chops, the cave man found he could get salt by licking his neighbor's cheek. Then he discovered the process was much more interesting if the neighbor was of the opposite sex. And then, everybody forgot about the salt."

**O**NE of the most interesting cases of "doubling in brass" that has come to our attention in recent months is the announcement that the University of Louisville has appointed George H. Seferovich to the dual position of Purchasing Agent for the University and Associate

**I**N similar vein, we are in receipt of a very practical and comprehensive reference folder from The Standard Register Company, Dayton, giving basic data on the company's products and services. Compilation of this folder, we are told, is the direct result of a recent article in *Sales Management* by Charles E. Colvin, Jr., Manager of Purchases for the Ethyl Corporation and a frequent contributor to **PURCHASING**. In discussing the topic "What Do Purchasing Agents Want from Salesmen?" Mr. Colvin recommended that the salesman leave with the buyer a presentation giving complete information on products, specifications, prices, delivery, terms, service, warranties, and the other details that a purchasing agent has to know, "in a clear, concise, readable

form that can be scanned without having to wade through a mire of superfluous advertising verbiage." Sales executives at Standard were impressed, checked with other buyers and found them in agreement with Mr. Colvin's ideas. The present folder is built to those specifications. Sales managers do consider the buyer's point of view.

NOT all of the alphabetical designations of governmental organization and projects have been as appropriate as the Defense Order rating that is becoming increasingly familiar in today's business. When you receive a DO order in your company, the general idea is that you get busy at once and DO the job.

WE Americans like to have a convenient descriptive label for the type of economy under which we are living and working at any given time. Taking a cue from the "All-Out War Economy" of recent memory, the term "10% War Economy" was just beginning to gain some popularity when the first control orders from NPA showed that 20% or 35% might be more accurate. Perhaps the best description evolved to date, bearing in mind that we are committed to a long-range program of military preparedness regardless of immediate war developments, is the term used by Economist A. W. Zelomek, who refers to our present position as a "Garrison Economy".

AT a recent conference of Educational Buyers, Purchasing Agent D. F. Finn of Brown University told of an interesting analysis of the purchasing program there. While the survey itself is highly individualized as to the particular operation, the questions that prompted it are significant to every purchasing man. It all started when Mr. Finn asked himself:

1. Do I spend my time on the items that are actually important to Brown?
2. Do salesmen influence me into spending a great deal of time and thought in relatively unimportant fields?
3. Are there competitive items in important volume on which I am spending little purchasing time?
4. Are there other factors besides dollar volume which will make a group of items important?

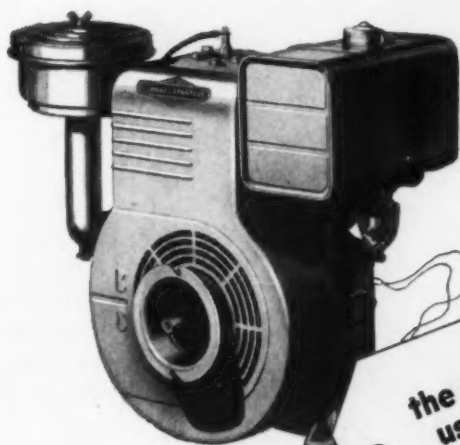
*More than*

5,000,000



The performance record of more than five million Briggs & Stratton single-cylinder, 4-cycle, air-cooled engines speaks for itself.

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"Preferred Power" for home, farm and industrial equipment — powered by gasoline engines.

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World Wide  
FACTORY  
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In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

# The **NEW** Brown & Sharpe MICROMETERS

**NEW!**

Larger  
diameter thimble

**NEW!**

Stainless Steel,  
one-piece  
spindle and screw

**NEW!**

Exclusive  
adjustments . . .  
easy, quick,  
accurate

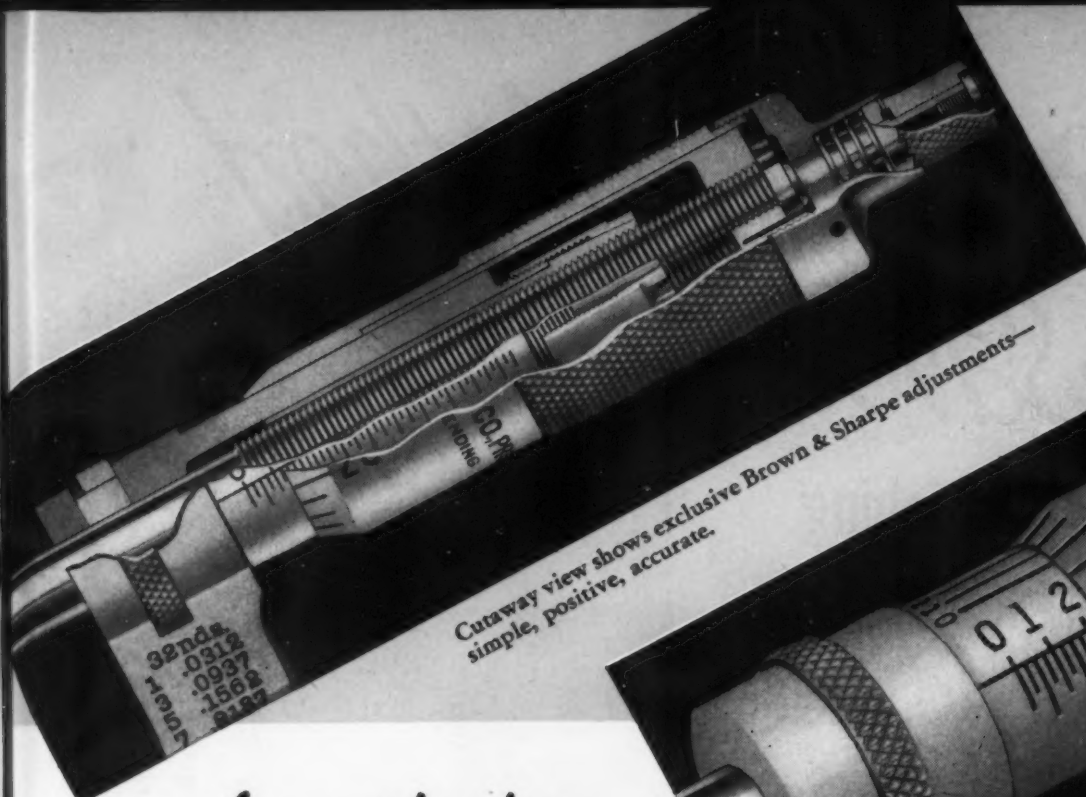
**NEW!**

Carbide  
measuring faces



- ★ Black graduations
- ★ Dull chrome finish
- ★ Wide divisions
- ★ Hardened and ground threads
- ★ New sliding taper thread adjustment
- ★ Positively locked screw and thimble
- ★ Quick, easy thimble adjustment
- ★ Rust resistant
- ★ Available in complete range of sizes





Cutaway view shows exclusive Brown & Sharpe adjustments—  
simple, positive, accurate.


## *An exclusive combination of advanced features!*

Never before has a line of micrometers offered such an outstanding combination of advanced features! Improvements throughout the new Brown & Sharpe Micrometers now contribute higher performance to every essential of micrometer service . . . readability, accuracy, ease of adjustment, durability.

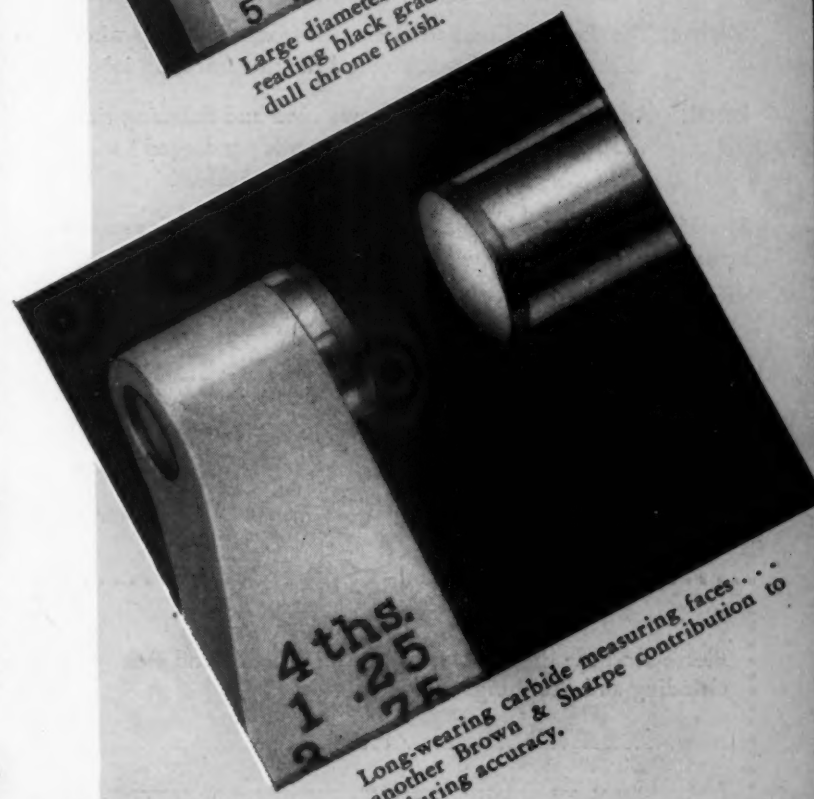
Notice the widely-spaced divisions, black graduations and dull chrome finish . . . for easy, accurate reading. Observe the integral spindle and screw with simplified thread adjustment and longitudinal adjustment of thimble on screw. Consider what the long-wearing carbide faces and one-piece stainless steel spindle and screw with hardened and ground threads mean to durability!

Only by actually seeing and holding one of these new micrometers in your own hand can you appreciate all the advantages of these many new features. See them at your hardware store or tool supplier's. Write for illustrated folder describing the completely new line of Brown & Sharpe Micrometers. Brown & Sharpe Mfg. Co., Providence 1, R.I., U.S.A.

*We urge buying through the Distributor*

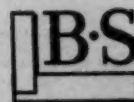


Large diameter thimble provides wide divisions. Easy-reading black graduations and figures on rust-resistant dull chrome finish.



Long-wearing carbide measuring faces . . . another Brown & Sharpe contribution to enduring accuracy.

# **Brown & Sharpe**



# Backstand Method Saves Time!

**Le Roi Co. cuts finishing  
time on forged handle  
from 5 minutes 11 seconds  
to 1 minute 32 seconds**

**Problem:** The Le Roi Company, in Cleveland, Ohio, used set-up wheels to finish forged paving breaker handles. This finishing operation required 5 minutes 11 seconds on the average per handle . . . was too long, too costly.

**Solution:** The Le Roi Company switched from the set-up wheel to the backstand belt method for this finishing job.

**Result:** An Armour abrasive belt was used and finishing time was reduced to 1 minute 32 seconds per forged handle . . . saving 3 minutes 39 seconds for each handle!

Manufacturers of hundreds of different industrial and consumer items have proved that the backstand belt method is more efficient and more economical than the set-up wheel.

If you are grinding, polishing or finishing flat or contoured surfaces, cast pieces, stamped pieces or forged pieces the backstand belt method can help you with your production problems.

To learn more about the many advantages of the backstand belt method, write today for our free booklet.

We recommend buying through your industrial distributor



## MAIL THIS COUPON TODAY

Please send me the booklet "Facts about Backstand Belt Grinding and Polishing."

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Armour's abrasive belts are only part of a complete line of abrasives built to rigid quality specifications. There are sheets, rolls, discs and other more specialized shapes.

**ARMOUR**

*Coated Abrasives Division*

SHEETS • ROLLS • BELTS • DISCS

Armour and Company  
North Benton Road • Alliance, Ohio

**IS YOUR PROBLEM  
MORE ECONOMICAL  
OPERATION  
IN YOUR SMALL ENGINES?**

*Specify*  
**BENDIX**

**THE MOST TRUSTED NAME  
IN MAGNETOS**

- ✓ **Simplicity in design.**
- ✓ **Waterproof moulded coil.**
- ✓ **Lower operating cost.**
- ✓ **Minimum lubricating requirement.**
- ✓ **Light in weight.**
- ✓ **Higher voltage at starting speeds.**
- ✓ **Constant spark over entire speed range.**
- ✓ **Compact and sturdy construction.**



There is no need for inflation in small engine operating and maintenance costs if you specify Bendix magnetos. The fact is, a new high in dependable performance can be obtained at no extra cost. The basic design of these rugged lightweights enables Bendix to meet the operating problems of *every type* of small engine, as well as *every pricing requirement*. If you want to hold down operating costs for the small engines you employ, be sure to insist on Bendix—the most trusted name in magnetos. Write us for full details.



**SCINTILLA MAGNETO DIVISION of**  
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Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, N. Y.

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A "New Dimension" in Railroadings served by Georgia-Pacific

## THE "REEFER" THAT HAULS WITH ITS SKIN!

### ...ANOTHER GPX ADVENTURE IN THE IMPOSSIBLE

That's what railroad men are saying about UNICEL—the new refrigerator box car made of light, super-strong plywoods. Pressed Steel Car Company started with Georgia-Pacific GPX plastic-faced plywood and ended up with a revolutionary design in which the entire skin of the car—not just the "keel"—works in hauling the load.

Floor, sides and top are sheets of GPX, fused together with phenolic glues under pressure and electronic heat. Result—a stronger, lighter car that costs less to build.

GPX, which combines the strength and durability of plywood with the armor-hard surface properties of plastic, is just one of the "new dimensions" that Georgia-Pacific works into its products to serve American business.

Through a nationwide network of modern plants, warehouses and sales offices, Georgia-Pacific offers in-

dustry a new kind of service, a "new dimension" in plywood, lumber and door buying . . . geared to help you buy more efficiently and economically.

**BUSINESS EXECUTIVES**—For a modern approach to plywood and lumber buying, write on your company letterhead for a copy of this 20-page full-color booklet—A "New Dimension," Georgia-Pacific Plywood & Lumber Company, 1233 Southern Finance Building, Augusta, Ga.

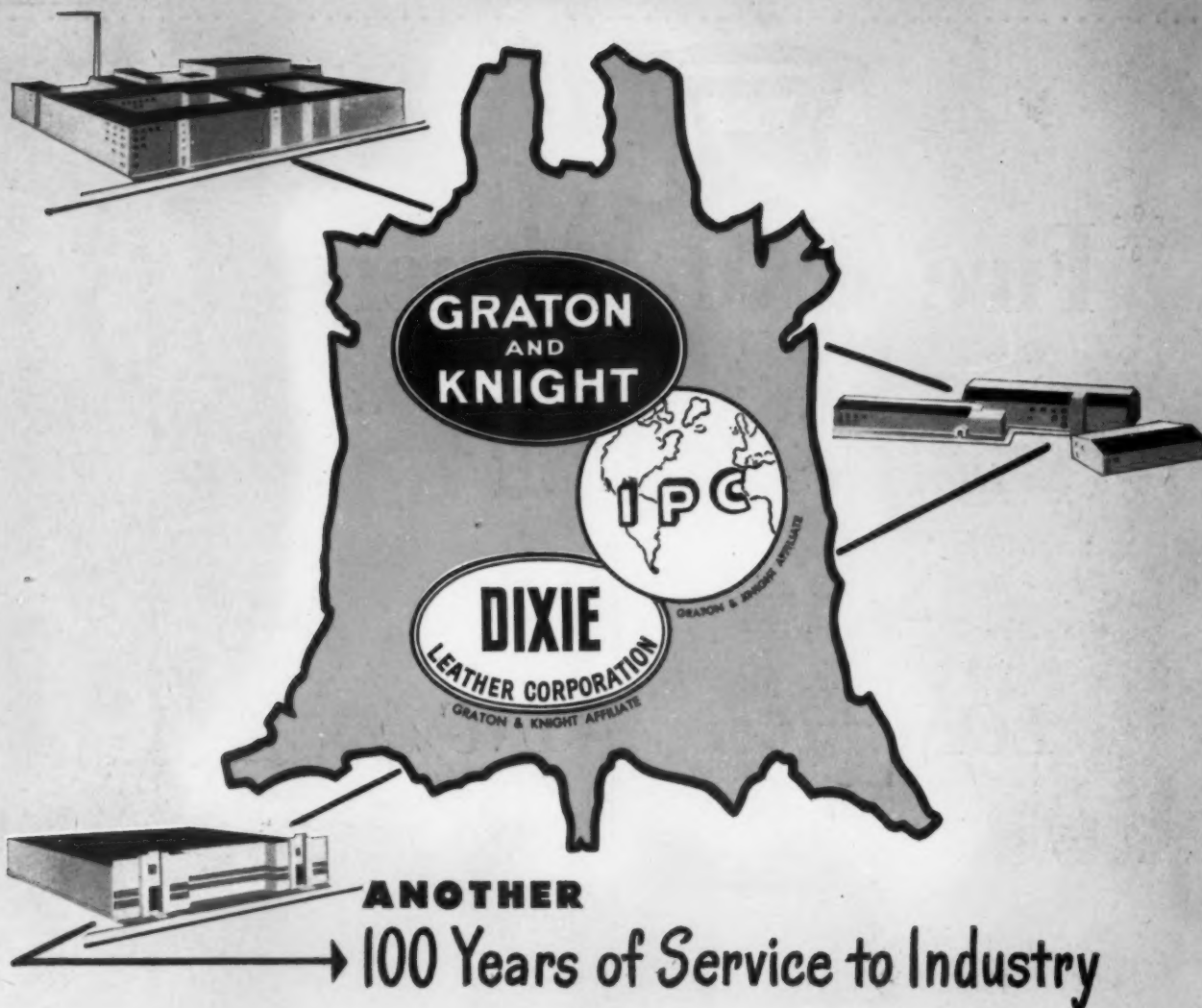


**GEORGIA—PACIFIC**  
**PLYWOOD & LUMBER CO.**

OFFICES OR WAREHOUSES IN: Augusta, Birmingham, Boston, Chicago, Columbia, Louisville, Memphis, Nashville, Newark, Olympia, Philadelphia, Portland, Raleigh, Richmond, Savannah



DOUGLAS FIR PLYWOOD • HARDWOOD PLYWOOD • GPX • SOUTHERN & WESTERN LUMBER • DOORS



The first 100 years were the hardest! When Henry Graton and Joseph Knight started this business in 1851, the steam engine was still a marvel, and leather belting reigned supreme in power transmission. Today, we enter the atomic age — a little wiser we hope, a lot stronger, and facing *Opportunity* bigger than even before.

*Opportunity* to harness new forces—to produce and distribute more goods in less time — to reduce waste—to make full use of the raw materials of science and nature. For science and nature work as a team . . . In leather the natural interwoven fibrous structure has never been equaled—but can now be processed to produce practically any result desired. A century of experience works with modern scientific research to the end that this age-old natural material is advancing its place in modern industry.

Early in the century, Graton and Knight Company foresaw the broad applications for molded packings, and the development of synthetic rub-

ber compounds found the Company equipped and ready to use these new materials. In 1949, the Company concentrated its laboratory, engineering and manufacturing facilities in an affiliate company, International Packings Corporation, at Bristol, New Hampshire, where, backed by Graton and Knight resources and experience, synthetic rubber and leather packings made by G&K-International are taking their place in modern industry.

As a service to the fast-growing Southern textile industry, Graton and Knight Company established in 1948 an affiliate company, the Dixie Leather Corporation at Albany, Georgia. Manned by experienced personnel, the Georgia plant supplies the same high quality Hairitan® and other textile leathers for which Graton and Knight is famous.

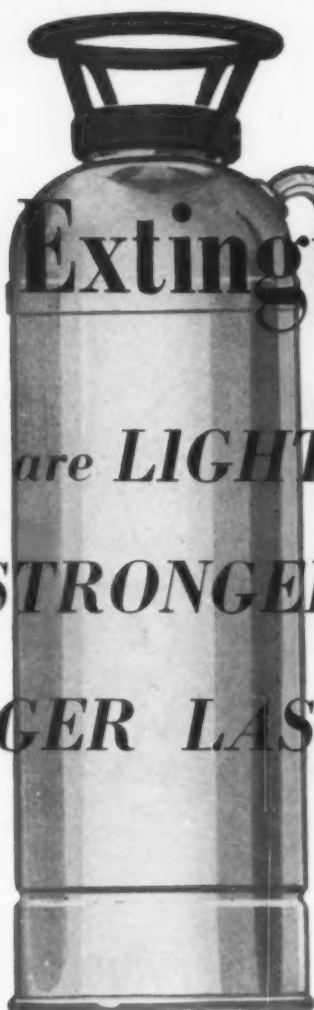
**GRATON & KNIGHT COMPANY**  
Worcester, Massachusetts

LEATHER BELTING • TEXTILE LEATHERS • SYNTHETIC AND LEATHER PACKINGS • WELTING AND SHOE LEATHERS • LACE AND WHOLE LEATHER • INSTRUMENT CASES • INDUSTRIAL STRAPPING AND LEATHER SPECIALTIES

Another of the Jobs\* that Stainless Steel does BEST

## \* Fire Extinguishers

that are **LIGHTER**  
**STRONGER**  
**LONGER LASTING**



**H**ERE'S an old friend with a handsome new face—and definitely new sales appeal, too! Can you improve a fire extinguisher, without materially changing the design or method of operation? The answer is emphatically yes—by making it of stainless steel.

For one thing, fire extinguishers made of Allegheny Metal are a third *lighter* than ordinary types. Women can operate them easily, and that could mean many a fire brought under quicker control, causing less damage. A second point: stainless extinguishers are at least 50% *stronger*. They're tested to much higher hydrostatic pressure than older types—which means they're potentially safer, longer-lasting, and better able to take a beating. And third: they're *better-*

*looking*—always bright, smart and efficient in appearance—a strong sales point with any buyer.

So—add fire extinguishers to the thousands of uses today for stainless steel. How about you? What jobs do you have where Allegheny Metal will pay you a profit? *Let us help you to find out.*

\* \* \* \* \*

Complete technical and fabricating data—engineering help, too—are yours for the asking from Allegheny Ludlum Steel Corporation, Pittsburgh, Pa. . . . the nation's leading producer of stainless steel in all forms. Branch Offices are located in principal cities, coast to coast, and Warehouse Stocks of Allegheny Stainless Steel are carried by all Joseph T. Ryerson & Son, Inc. plants.

W&D 3065

You can make it BETTER with  
**Allegheny Metal**





# A GREAT NEW POWER BLADE

*with*

- **GREATER SAFETY**

Shatterproof, Extra Strong Body,  
Practically Unbreakable

- **GREATER PRODUCTIVITY**

High Speed Steel Welded Edge  
for More, Straighter  
Cuts Per Blade



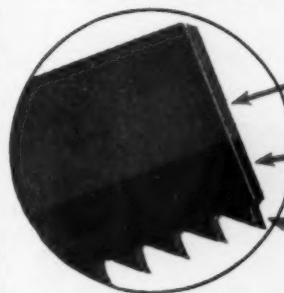
## Starrett® SAFE-FLEX® HIGH SPEED WELDED-EDGE POWER HACKSAW BLADES

This great, new hacksaw blade gives you all the features you've always wanted for power cutting — a *completely safe, shatterproof, extra tough body* combined with a *high speed steel cutting edge* that makes it the safest, straightest cutting, most durable blade you've ever tried.

"DOUBLE WELDED STEEL CONSTRUCTION", an entirely new development in blade design, backs up the performance of this outstanding blade. Its hard, high speed steel cutting edge is integrally welded to a medium hard, extra strong steel center also welded to a super tough steel back. Result is a far stronger blade with a perfect balance between hardness and toughness that makes the Starrett SAFE-FLEX cut straighter, completely shatterproof and ideal for heavy feeds and rugged jobs such as interrupted cuts and sawing multiple work.

Let your safety engineer prove it for himself. Order some Starrett SAFE-FLEX Welded Edge Power Blades today.

### SHATTERPROOF DOUBLE-WELDED STEEL INSURES SAFER, STRAIGHTER CUTTING



Super-Tough Steel  
Back For Extra Tough-  
ness

Medium-Hard Steel  
Center For Extra  
Strength

Hard "High Speed"  
Edge For High Produc-  
tion Cutting. Heavy  
H. S. Edge — No Tooth  
Stripping

**There's a Starrett Blade for Every Job — S-M Molybdenum, High Speed Tungsten 18-4-1,  
Safe-Flex, Standard — Hand and Power Sizes**

# Starrett

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## Standard of Precision

### BUY THROUGH YOUR DISTRIBUTOR

Mechanics' Hand Measuring Tools and Precision Instruments  
Dial Indicators • Steel Tapes • Precision Ground Flat Stock  
Hacksaws, Band Saws and Band Knives



THE L. S. STARRETT CO. • World's Greatest Toolmakers • ATHOL, MASSACHUSETTS • U. S. A.



# ...easier to

**T.G. PERITO, ELECTRICAL CONTRACTOR, LEARNS**

Mr. Perito: "Naturally we want to use motor starters on our jobs that stand up—and keep out of trouble. That's one way we keep our customers satisfied. But as electrical contractors, we're equally interested in using starters that are easy to mount and wire."

You're not alone, Mr. Perito. A lot of designers and maintenance men want the same thing in a starter—fast, easy installation! That's why we're asking you to make the "screwdriver test" on that new G-E starter in front of you. Ready? Let's go!



**1** Mr. Perito: "How is this contactor mounted in the case?"

By means of keyhole slots you see in the contactor base, Mr. Perito. After you've mounted the empty case on the wall or a machine, you locate the keyhole slots over the mounting screws and the contactor slips into place!



**2** Mr. Perito: "Lots of knockouts, I see!"

You'll find these on every side of the case—more than enough to give you faster, neater installations. Plenty of room on the inside, too, and notice how the light grey finish on the inside gives you plenty of reflected light!

## GENERAL ELECTRIC

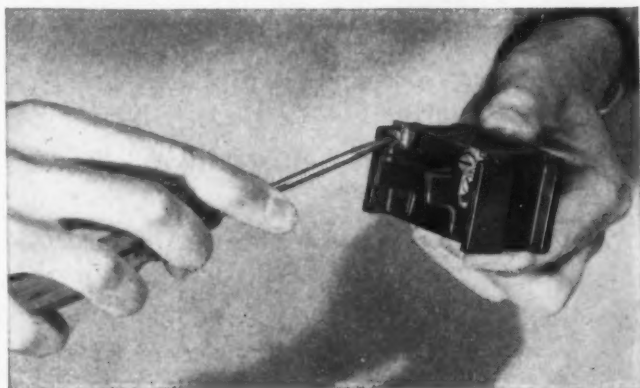
730-18

# install for these 6 reasons

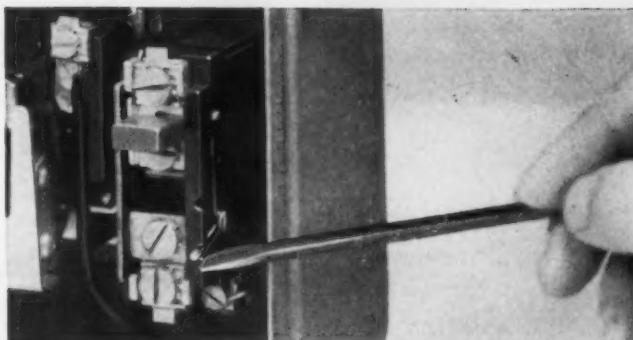
ABOUT THESE IMPORTANT FEATURES WITH THE "SCREWDRIVER TEST"



**3** Mr. Perito: "Are all the terminals easy to get at?" Every one of them is up front where it's easy to get at, and wire. And they're big terminals with panhead screws and saddle-type connectors that ride up with the screw head. The stripped wire simply slides into place and is easily secured with a turn of your screwdriver.



**4** Mr. Perito: "Tough-looking coil! Is it new?" Right! It's called the "Strongbox Magnet Coil" and it's an exclusive with the new G-E starter line. Feel how solid it is! If your electrician's screwdriver slips, it can't hurt the windings—they're safely locked in a block of molded plastic. And oil, dust or water can't get at them, either!



**5** Mr. Perito: "How do I set the overloads?" Easy—and you don't have to take the starter apart to do it. Flip that little lever and it's on "Automatic." Flip it back and it's on "Manual." Heaters are in the front, can be changed without disturbing any wiring.



**6** Mr. Perito: "What about maintenance?" Once this new G-E starter is installed, it stays installed. There's no need to remove the case for ordinary maintenance or even to replace or reverse contacts. Just remove the arc chute and there are your terminals.

**WHY DON'T YOU  
"BUY ONE AND COMPARE?"**



See for yourself why this new line of G-E motor starters lasts longer, costs less to install than almost any other starter you can buy. Your G-E representative or authorized G-E agent or distributor can supply you from stock in NEMA sizes 0, 1, 2 and 3 for a-c motors up to 50 hp. For a complete description, write for Bulletin GEA-5153, Section 730-18, Apparatus Dept., General Electric Company, Schenectady 5, New York.



# Look at this difference in MACHINING COSTS



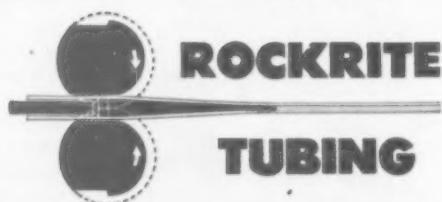
These startling figures were developed from actual cost records. The difference of 1.9¢ per part is the result of two important Rockrite advantages:

**SMALLER MACHINING ALLOWANCE** — That's because Rockrite Tubing is sized by a distinctively different process to *much closer tolerances* than are practical by any other method.

**BETTER MACHINABILITY OF METAL** — Because Rockrite Tubing is sized by cold-compression; has a denser, more uniform microstructure, better work surfaces — permitting higher cutting speeds and feeds. In this case machine output is some 60% higher.

The extra cost of Rockrite stock is only six-tenths of a cent per piece, and the costs shown above do not include savings in handling, coolant, rejects or magazine stocking.

Do you know the 3 requirements essential for tube accuracy and cost savings? New Bulletin R2 tells you . . . gives all the facts on close-tolerance Rockrite Tubing. Send for your copy today.



## Leads all others in these savings

- Higher cutting speeds
- Tools last longer between grinds
- Work-surface finishes are better
- Machined parts have closer tolerances
- Stations on automatics are often released for additional operations
- Extra-long pieces available—less downtime for magazine stocking and fewer scrap ends
- Closer tolerances often eliminate necessity for machining on outside or inside

**TUBE REDUCING CORPORATION • WALLINGTON, NEW JERSEY**



Can you find the clue...



...to quality?

X marks the spot...



...a PHILLIPS SCREW

You don't have to be a super-sleuth to find the sign of quality on a modern product. Just look for Phillips Cross-Recessed-Head Screws. Used on everything from refrigerators to cattle trailers, Phillips screws make possible the tightness at all fastening points. Your assurance that a built-in quality is built into every product.

Phillips Cross-Recessed-Head Screws are available in many sizes and materials. Write for literature.



*Does your product have this clue to quality?*

Use of Phillips Screws  
proves extra care in manufacture

Production men know. Design engineers know. Purchasing agents know. AND NOW THE PUBLIC KNOWS that...

X marks the spot... the mark of *extra* quality. The identifying X formed by the cross-recess on the head of every Phillips Screw.

14 million readers of The Saturday Evening Post are being urged to look for this clue to quality in modern, well-built products.

Phillips Screws make your product stronger, better looking. They eliminate jagged burrs, split screw heads, make production power driving possible. Whether you use Phillips wood screws, machine screws or tapping screws you gain time, money, work-hours.

◀ Current advertisement on Phillips Screws appearing in The Saturday Evening Post.

**PHILLIPS** *Cross-Recessed-Head* **SCREWS**

*X marks the spot... the mark of extra quality*

AMERICAN SCREW CO. • THE BLAKE & JOHNSON CO. • CAMCAR SCREW & MFG. CORP.  
CENTRAL SCREW CO. • CONTINENTAL SCREW CO. • ELCO TOOL & SCREW CORP.  
GREAT LAKES SCREW CORP. • THE H. M. HARPER CO. • NATIONAL LOCK CO. • PARKER-KALON CORP.  
PHEOLL MANUFACTURING CO. • ROCKFORD SCREW PRODUCTS CO. • SCOVILL MANUFACTURING CO.  
SHAKEPROOF INC. • THE SOUTHTONING HDWE. MFG. CO. • WALES-BEECH CORP.



THE FASTENERS OF TODAY... AND OF THE FUTURE

**"We don't have any more needless  
fuse blows on our Air Compressor  
circuit since we installed  
FUSETRON dual-element FUSES"**

"Prior to the time we installed Fusetron fuses to protect the circuit feeding the 125 h.p. 220 volt, 3 phase motor on our air compressor we were troubled with fuses blowing needlessly.

"On an average of once every two weeks one of the 400 ampere, 250 volt renewable fuses protecting the circuit would open on the starting current of the motor.

"About May of 1947 we replaced the fuses with 400 ampere Fusetron fuses. Since then we have not had the circuit down once because of a needless blow."

*Leon C. England,*  
Chief Electrician  
Link Belt Company  
Indianapolis, Ind.

**Fusetron DUAL ELEMENT Fuses**  
**give 10-Point Protection**

- 1** ★ Protect against short circuits.
- 2** Protect against needless blows caused by harmless overloads.
- 3** Protect against needless blows caused by excessive heating — lesser resistance results in much cooler operation.
- 4** Provide thermal protection — for panels and switches against damage from heating due to poor contact.
- 5** Protect motors against burnout from overloading.
- 6** Protect motors against burnout due to single phasing.
- 7** Give **DOUBLE** burnout protection to large motors — without extra cost.
- 8** Make protection of small motors simple and inexpensive.
- 9** Protect against waste of space and money — permit use of proper size switches and panels.
- 10** Protect coils, transformers and solenoids against burnout.

\* Fusetron Fuses have high interrupting capacity as shown by tests of the Electrical Testing Laboratories of New York City in December 1947.





# Act on the Facts

Don't risk losses in your plant

One **needless** shutdown,  
One **lost** motor,  
One **destroyed** panel or switch,  
One **burned out** solenoid—

May cost you more than replacing every ordinary fuse with a FUSETRON dual-element fuse.

But, simply knowing that FUSETRON fuses do save money is knowledge — but it isn't action.

By passing the word along that all purchase and stock records should call for FUSETRON dual-element fuses, you have action that begets money saving.

## What is the FUSETRON Dual-Element FUSE?

A fuse link combined with a thermal cutout—the result, a fuse with tremendous time-lag and much less electrical resistance.

They have the same degree of Underwriters' Laboratories approval for both motor-running and circuit protection as the most expensive devices made.

Made to the same dimensions as ordinary fuses, FUSETRON Fuses fit all standard fuse holders.

Obtainable in all sizes from  $\frac{1}{10}$  to 600 ampere, both 250 and 600 volt types. Also in plug types for 125 volt circuits.

Their cost is surprisingly low.

(FUSETRON is a trade mark of the Bussmann Mfg. Co., Division of McGraw Electric Co.)



Bussmann Mfg. Co., University at Jefferson  
St. Louis 7, Mo. (Division McGraw Electric Co.)

Please send me complete facts about FUSETRON Dual-Element FUSES.

Name

Title

Company

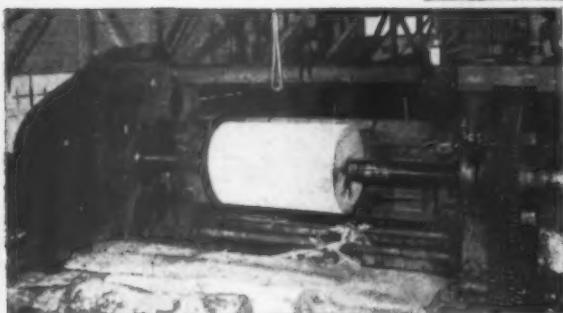
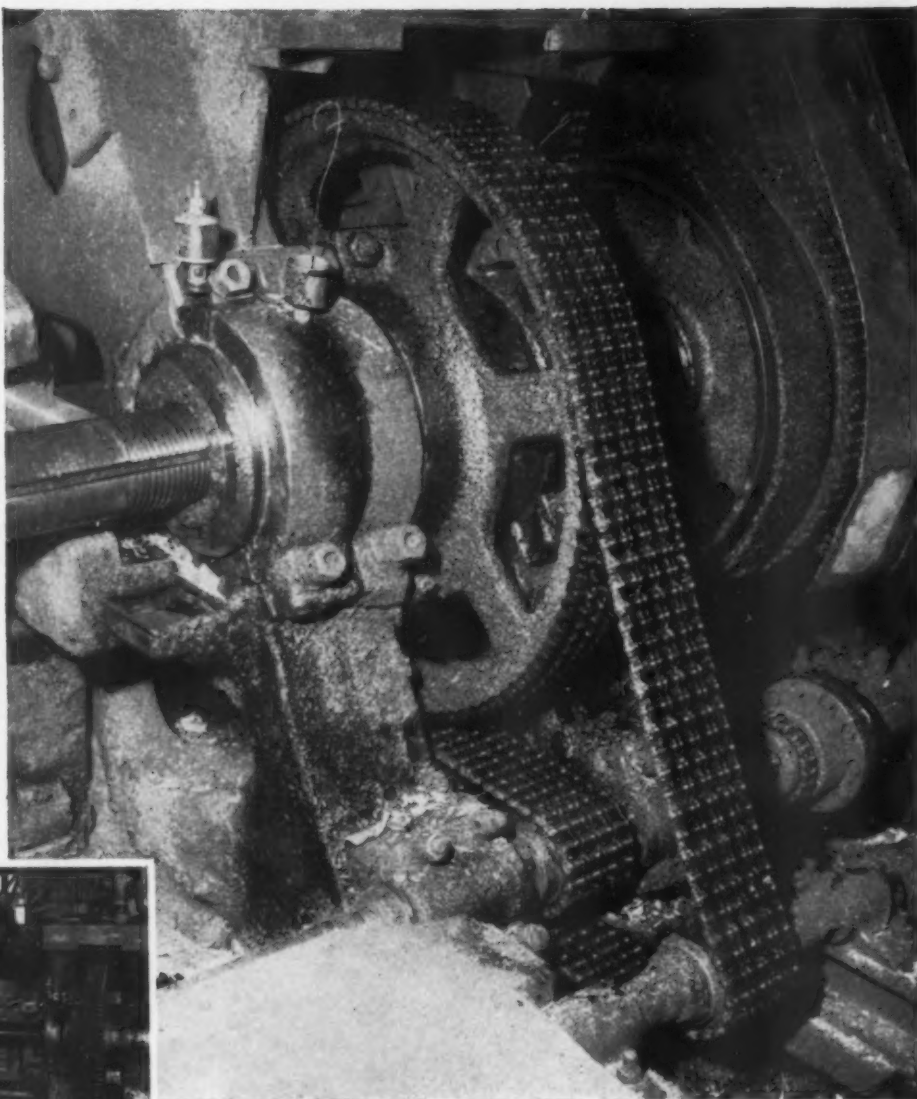
Address

City  State  191

# Whitney Chain Drives

*'Pay Off  
where  
the Chips Fly'*

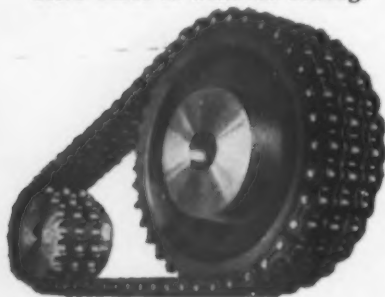
with  
**Uninterrupted  
Service**



Whitney Roller Chains transmit positive power on this 66-inch lathe.

## Whitney Service

And remember, Whitney Chain Drives . . . roller, silent, conveying chains, and cut-tooth sprockets . . . are carried in stock by more than 130 Whitney Distributors. This fast local service saves you time, assures prompt delivery. In addition 15 Whitney Field Offices, strategically located throughout the country, are at your service to help solve your power transmission problems. Consult your nearest Whitney Field Office or write for catalog.



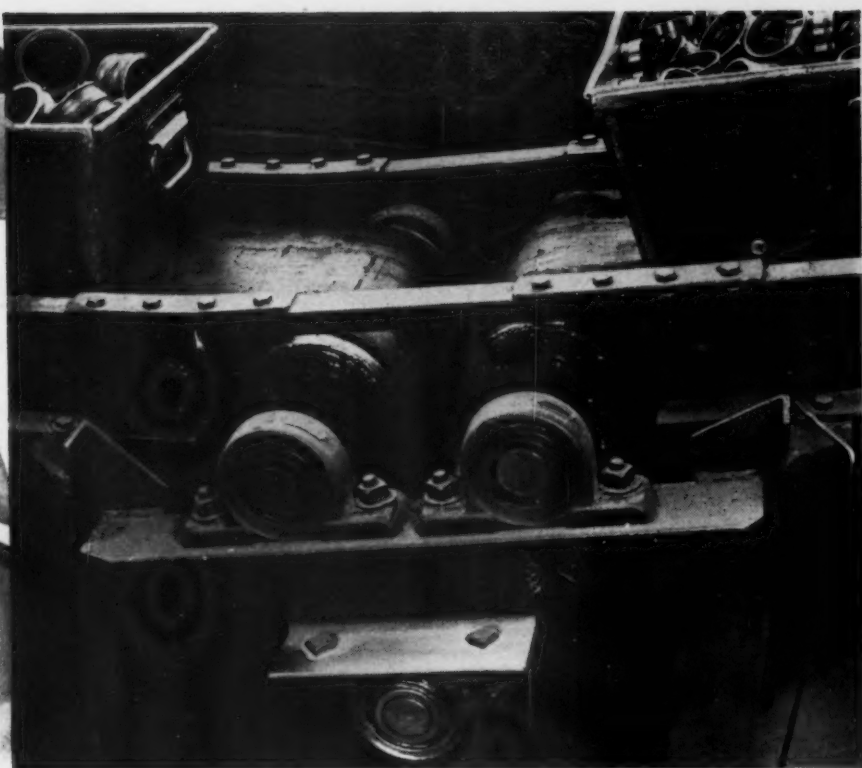
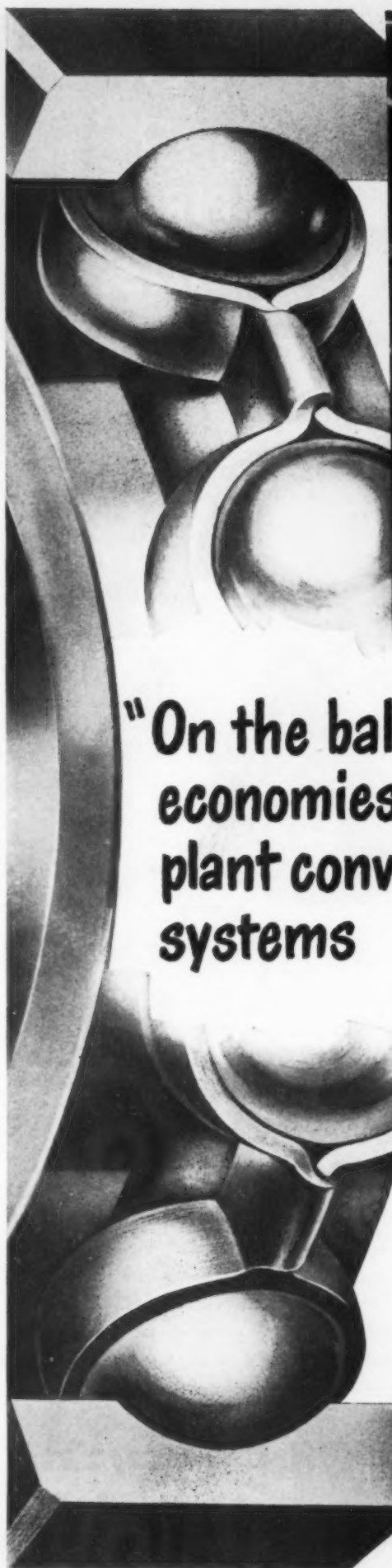
For over eighteen months, Whitney Chain Drives have been transmitting uninterrupted power on a 66-inch lathe in the Perry County Plywood Corporation at Beaumont, Mississippi. As the illustrations show, operating conditions are severe, and the chain has to operate constantly in wood chips and dust.

That Whitney Chain Drives stand up under the toughest of service is evidenced by the following quote from that company — *"We are extremely happy to report that from the moment the operation started, it has given us not a moment's trouble, nor have we as yet had to make any adjustments. Besides, the quietness of the machine with the chain drive would in itself have been well worth the change."*

Regardless of the type of equipment, whether it be for original installation or a replacement of the existing drive, Whitney Chain Drives . . . the all steel drives . . . meet the requirements for positive power transmission. Their versatility and adaptability enables them to meet standard or special requirements . . . permits operation on long or short centers . . . drive shafts clockwise or counter-clockwise from one power source simultaneously, while the hardened alloy steel construction throughout guarantees long life with minimum maintenance.

## Whitney Chain Company

207 Hamilton St., Hartford 2, Connecticut



## "On the ball" economies for plant conveyor systems

**8 years of operation** with no servicing except infrequent lubrication . . . that's the record of the Fafnir Ball Bearing units installed on the conveyor shown. And that's the type of bearing performance which puts materials handling into the low-cost bracket. During the war, these units were running 24 hours a day. Since then, at least 80 hours a week.

The complete bearing installation on the 3-pulley snubbing device of the conveyor includes 6 Fafnir LAK 1-11/16" Pillow Blocks. Four of the blocks are mounted right side up and two, upside down. The conveyor transfers heavily loaded work boxes from one plant floor to another. Like all Fafnir Industrial Units, these LAK Pillow Blocks have the famous Fafnir Wide Inner Ring Ball Bearings with self-locking collars . . . easiest of all to install.

Let your Fafnir distributor show you how to cut materials handling costs with Fafnir Ball Bearing Industrial Units that give dependable, long-life service. The Fafnir Bearing Company, New Britain, Conn.

# FAFNIR

## BALL BEARINGS

MOST COMPLETE

LINE IN AMERICA

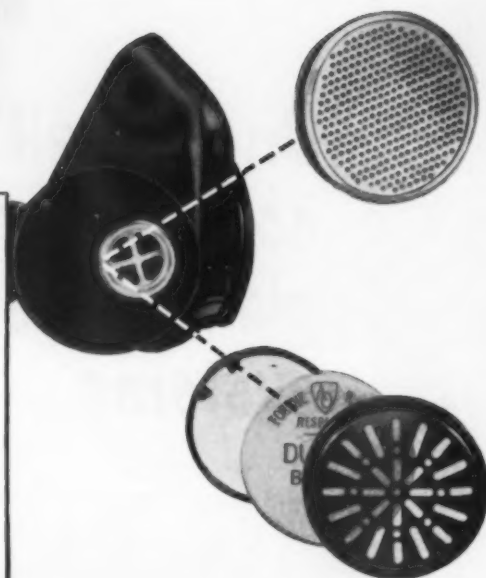




## NEW AO RESPIRATOR LINE

### Pay for ONE Facepiece, GET 7 TYPES OF PROTECTION with the AO R5000!

Yes, due to quick interchangeability of its threaded cartridges and disc type filter, the AO R5000 line of TWIN CARTRIDGE RESPIRATORS permits you to standardize on one respirator in protecting your workers against the multitude of dust, vapor and gas hazards commonly met with in industry. Remember, there's only one facepiece to stock and the R5000 offers greater visual area and many advanced construction features that mean added safety and comfort. Ask your nearest AO Safety Products Representative for the R5000. Tell him the respiratory hazards encountered in your operations and he will recommend the disc type filter and/or cartridges required.



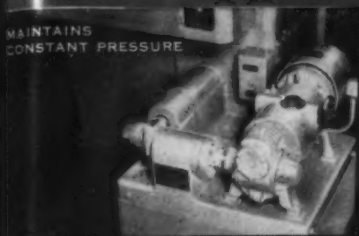
#### QUICK, EASY INTERCHANGING!

Retainer assembly accommodates both chemical cartridges and AO disc type filter — the small chemically treated filter that gives 40 times the dust protection of untreated filters. The cartridges screw in — assures a positive gas-tight seal. The felt filters stay put safely by a cover that screws onto retainer assembly.

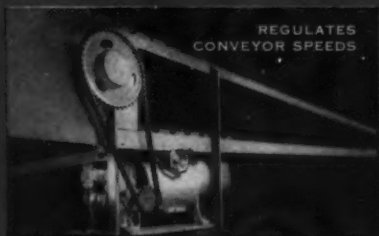
**American Optical**  
COMPANY  
SAFETY PRODUCTS DIVISION

Dust Filter and Organic Vapor Cartridges,  
Combinations of both, and Metal Fume  
Cartridges Approved by the U. S.  
Bureau of Mines

*Southbridge, Massachusetts • Branches in Principal Cities*



MAINTAINS  
CONSTANT PRESSURE



REGULATES  
CONVEYOR SPEEDS



SYNCHRONIZES  
MACHINES IN SERIES



FOR CHANGES  
IN VISCOSITY

**again and again  
variable speed operation  
makes a good job better**

Better because variable speed operation pays off in higher rates of production, a more uniform better quality product and more efficient performance of your equipment and your operators.

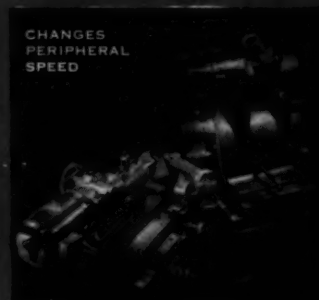
Make the job better still by using Master Speedrangers because their all-metal construction makes them extremely compact and durable . . . more flexible and adaptable to a wide range of uses. They're available in sizes up to 5 horsepower with speed ranges up to 12 to 1 in most sizes.

Write for descriptive booklet Data 7525 and see how Master Speedrangers can help you get better results on material processing, handling and conveying equipment . . . mixers and agitators . . . machine tool drives . . . testing and calibrating equipment and many other applications.

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO



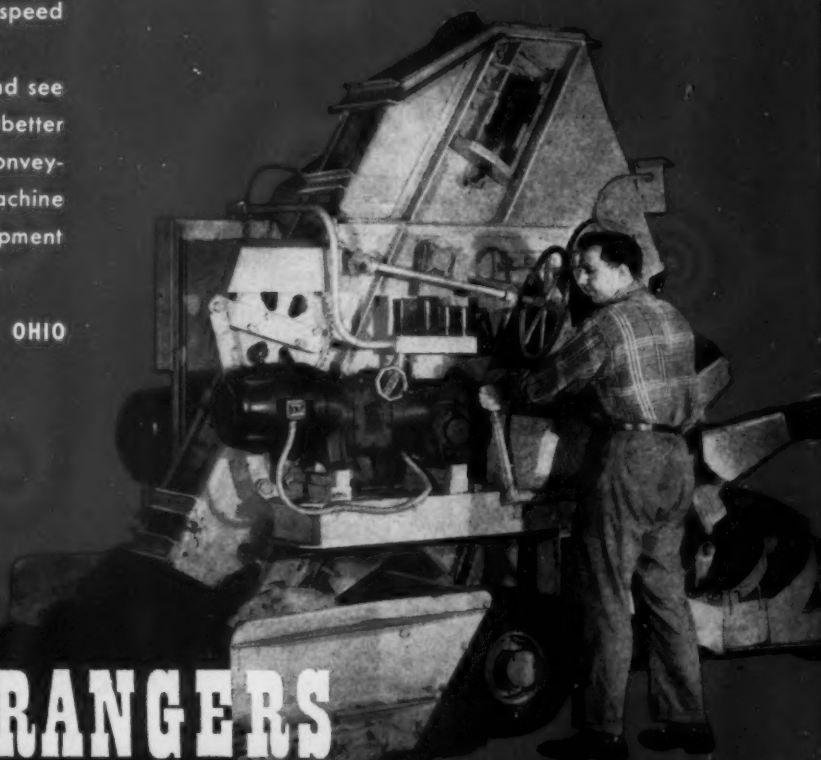
CHANGES  
IN SIZE  
AND WEIGHT



CHANGES  
PERIPHERAL  
SPEED



**SPEEDRANGERS**





## HOW TO UNCOVER EXTRA SAVINGS...

Most manufacturers today are aware of the advantages of using hardened Self-tapping Screws. They save time and simplify assembly by eliminating tapping for machine screws, by avoiding inserts in plastics, by using one operation fastening in place of bolting, riveting, soldering.

But they still may be missing some substantial extra savings, because all Self-tapping Screws are *not* alike. Planned savings don't always pay off.

Screws are a bit like people. If they lose their heads when under pressure . . . or turn out to be "softies" . . . or just don't "square up" on jobs, they can slow up a job for sure. You can avoid this by specifying "Parker-Kalon".

When Parker-Kalon developed the *first* Self-tapping Screws, over 35 years ago, they learned how to keep hardness and toughness properly balanced—how to make threads sharp and clean from head to point—in every screw. That's why every screw in every box can be *guaranteed* first quality.

Start making the extra savings you've been missing. Find out why the manufacturers of so many of the nation's best known products say, "If it's P-K\* . . . it's O.K.!" A P-K Assembly Engineer will call at your request. Parker-Kalon Corporation, 200 Varick St., New York 14, N. Y. Sold everywhere through accredited Distributors.

\*TRADE MARKS REG. U.S. PAT. OFF.



## *The Original* **PARKER-KALON\* SELF-TAPPING SCREWS**



OTHER P-K PRODUCTS: Cold-Forged Socket Screws, Wing Nuts, Thumb Screws • Hardened Screwnails and Masonry Nails • Shur-Grip File and Solder Iron Handles • Metal Punches • Damper Regulators and Accessories



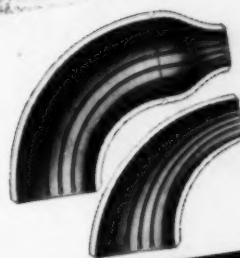
# Ladish Reducing Elbows



PATENT PENDING



TO MARK PROGRESS



## FLOW EFFICIENCY

Uniform, gradual reduction in diameter from face to face of the fitting, plus full, effective center-line radius reduces turbulence and assures maximum flow efficiency.



## SEAMLESS DESIGN

The first practical Seamless Reducing Elbow, this Ladish development for which a patent is pending, is formed in one piece from high quality seamless tubing at forging temperature.



## EASY TO INSTALL

Welding and installation time is reduced by these Ladish Reducing Elbows which eliminate the need for handling and welding an additional fitting.

**SAVE WELDING COST • SAVE AN EXTRA FITTING  
SAVE LOSS IN FLOW EFFICIENCY • SAVE SPACE**

A single Ladish Seamless Reducing Elbow eliminates the 90° Elbow and Reducer formerly needed to change direction of flow and reduce pipe size simultaneously. This effects considerable installation economies... saving one weld and one fitting at each location... with the added advantage of accomplishing the reduction in less space. In addition, the smooth, gradual reduction in diameter of Ladish Reducing Elbows offers less resistance to flow.

Ladish Reducing Elbow Size Range—2" x 1" through 12" x 6"  
in Standard and Extra Strong Weights. Seamless through 6" x 3".

THE COMPLETE *Controlled Quality* FITTINGS LINE  
PRODUCED UNDER ONE ROOF...ONE RESPONSIBILITY

## LADISH CO.

CUDAHY, WISCONSIN  
MILWAUKEE SUBURB

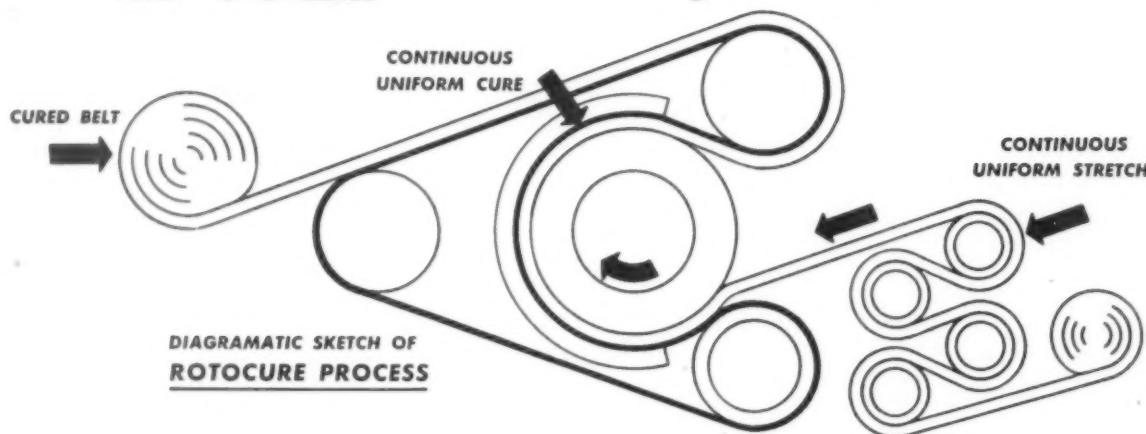
District Offices: New York • Buffalo • Pittsburgh • Philadelphia • Cleveland • Chicago  
St. Paul • St. Louis • Atlanta • Houston • Tulsa • Los Angeles • Havana • Toronto



# ROTOCURE Eliminates this "Achilles Heel"\*

\* Overcured Sections which occur every 30' to 40' are a primary cause of failure in belts made by the flat press method. You won't find these "Achilles Heels" of double vulcanization in BWH Conveyor Belts.

## WITH BWH Conveyor Belts



Curing a small segment of rubber belting *twice* is unavoidable when belts are made under the conventional flat press method. With this "stop and go" technique, a cured segment is advanced slightly less than a press length. As vulcanization is resumed, an overcured segment results due to overlapping. This twice-cured segment is a critical section or "Achilles Heel" of about 2 to 4 inches in length and the width of the belt. It is responsible for structural weaknesses and excessive surface wear which cause early belt failure and high maintenance costs.

To solve this problem, BWH technologists pioneered the ROTO-

CURE process of *continuous* vulcanization whereby every *inch* of belting receives the same, *uniform* curing treatment. Here are 4 important reasons why ROTO-CURE has paid off for users throughout industry, in installation after installation — by longer service life before replacement.

1. Because there is no double vulcanization, uniform abrasion-resistant covers are always assured.
2. A continuous vulcanization eliminates the overlaps which can reduce flex life up to 40%.
3. Mechanical distortion (inherent with flat press curing at the press ends) is eliminated.

4. Constant uniform stretch results at all times.

As with conveyor belting — so with transmission belting, the BWH ROTO-CURE process provides all these advantages plus a higher coefficient of friction because dusting agents are not required in the manufacture with ROTO-CURE.

Call in the BWH distributor or write us direct for the full story of ROTO-CURE and what it can do for you in keeping conveyor belts working efficiently longer — and holding belting costs down to earth.

Another Quality Product of  
**BOSTON WOVEN HOSE & RUBBER COMPANY**  
Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P. O. BOX 1071, BOSTON 3, MASS., U. S. A.



ADD FLEXIBILITY TO YOUR SURFACE GRINDERS WITH

# EX-CELL-O

## PRECISION SPINDLES

You can add to the flexibility of your surface grinders, and perhaps save the cost of another machine, with Ex-Cell-O spindle equipment. For instance the large photo at left shows an inbuilt motor spindle that swivels vertically. It makes a standard surface grinder suitable for sharpening cutters and broaches. A mounting member extends through bore in column that ordinarily houses the standard horizontal spindle.

The Ex-Cell-O High Speed Attachment also adds to the flexibility of surface grinders. This attachment mounts on the standard horizontal spindle or spindle bracket. The standard surface grinding wheel is replaced by a pulley that, through a flat belt, drives the high speed spindle at 18,000 rpm. Thus, small wheels can be driven at an efficient speed for grinding small shoulders, slots and other hard-to-reach places.

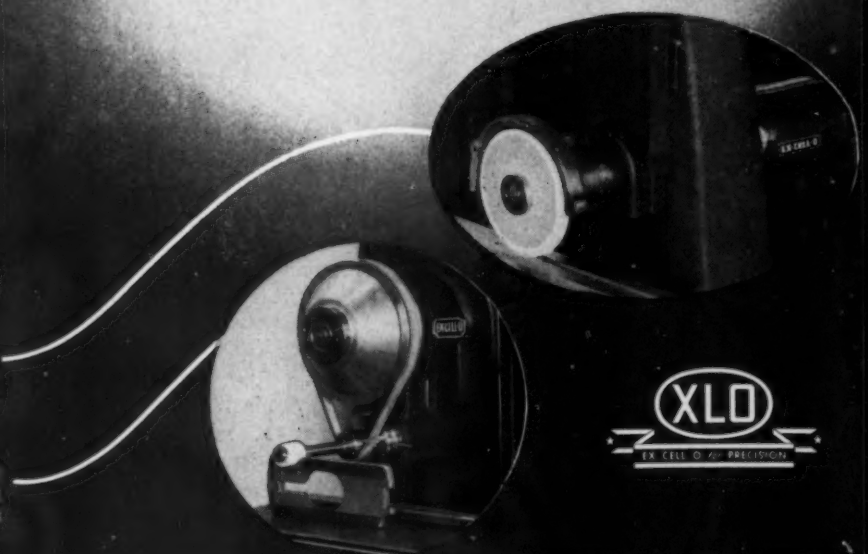
For rigid, smooth-running spindles that require no further lubrication or adjustment, and produce fine work day after day, contact your Ex-Cell-O representative or write to Ex-Cell-O Corporation in Detroit.

Send today for Ex-Cell-O's free Precision Grinding Spindle Catalog, Number 25962. No obligation, of course. Just use your company letterhead.

Ex-Cell-O 1 horsepower, 3600 rpm inbuilt motor spindle for surface grinder. Spindle swivels vertically, is used for sharpening cutters and broaches.

Standard horizontal Ex-Cell-O Precision Spindle with 1 horsepower, 3600 rpm inbuilt motor for surface grinders. Standard Ex-Cell-O belt-driven spindles also are available for this type of grinder.

This Ex-Cell-O High Speed Attachment drives small wheels at 18,000 rpm. It is driven by the standard motorized spindle and is supported by the standard spindle or spindle bracket.



# EX-CELL-O CORPORATION

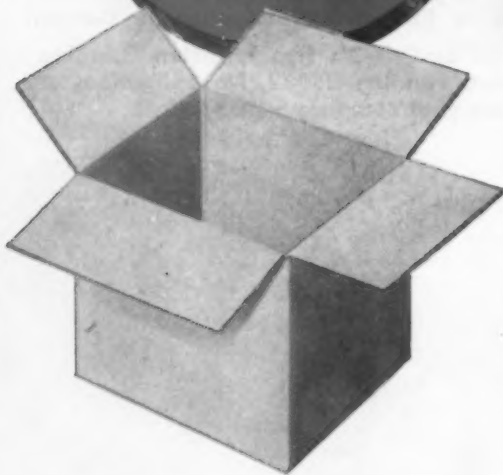
DETROIT 32  
MICHIGAN

MANUFACTURERS OF PRECISION MACHINE TOOLS • CUTTING TOOLS • RAILROAD PINS AND BUSHINGS  
DRILL JIG BUSHINGS • AIRCRAFT AND MISCELLANEOUS PRODUCTION PARTS • DAIRY EQUIPMENT



# Gaylord Packaging

## *One Sure Way to Build Good Will...*



CORRUGATED AND SOLID FIBRE BOXES  
FOLDING CARTONS  
KRAFT BAGS AND SACKS  
KRAFT PAPER AND SPECIALTIES



### **DON'T BE VULNERABLE TO COMPETITION BECAUSE OF UNNECESSARY DAMAGE CLAIMS**

If your product is properly packaged, claims for damaged merchandise should be almost eliminated. Your customers know this. The annoyance involved in making claims for damage, as well as the sales lost because merchandise is not available, can open the door for your competitors. *Be sure* your shipping container is right for your product.

### **GAYLORD CONTAINER CORPORATION, General Offices: ST. LOUIS**

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle • Indianapolis • Houston • Los Angeles  
Oakland • Minneapolis • Detroit • Columbus • Fort Worth • Tampa • Cincinnati • Dallas • Des Moines • Oklahoma City • Greenville  
Portland • San Antonio • Kansas City • St. Louis • Memphis • Bogalusa • Milwaukee • Chattanooga • Weslaco • Appleton  
Hickory • Sumter • New Haven • Greensboro • Jackson • Miami • Mobile • Omaha • Philadelphia • Little Rock • Charlotte



## HOW DID SUNSET BLVD GET ON BROADWAY?

Everyone knows that it's hard to be in two places at the same time.

But recently, Paramount Pictures had to be in 387 places at once.

The release of their smash hit, "Sunset Boulevard," called for *simultaneous* openings in theatres on Broadways all over America. And although Gloria Swanson

is being mentioned for an Oscar, Paramount feels there ought to be a special award for a star not even mentioned in the cast.

That's Air Express!

Thanks to Air Express, Paramount could work on the cutting, editing and printing of this film up to the last minute—and still get there on time!

But, you don't have to be in the motion picture industry to profit from regular use of Air Express. Here are its unique advantages which any business can enjoy:

**IT'S FASTEST**—Air Express gives the fastest, most complete door-to-door pick up and delivery service in all cities and principal towns, *at no extra cost.*

**IT'S MORE CONVENIENT**—One call to Air Express Division, Railway Express Agency, does it all.

**IT'S DEPENDABLE**—Air Express provides one-carrier responsibility all the way and gets a *receipt upon delivery.*

**IT'S PROFITABLE**—Air Express expands profit-making opportunities in distribution and merchandising.

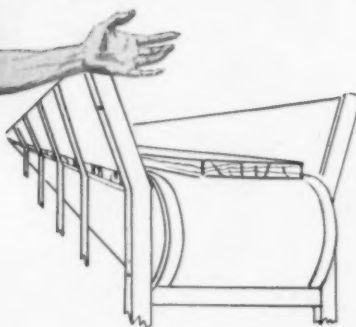
Like to know more? Call your local Air Express division of Railway Express Agency.



"Republic Record Maker may be the right conveyor belt for your job, too. Give us a call and we'll soon find out. Republic Distributors like me make free analyses of every job. Our recommendations save you money."



"Proper maintenance can increase conveyor belt life more than 50%. We keep our Republic Record Maker Belt centered to avoid unnecessary edge rub."



# Try Republic First...

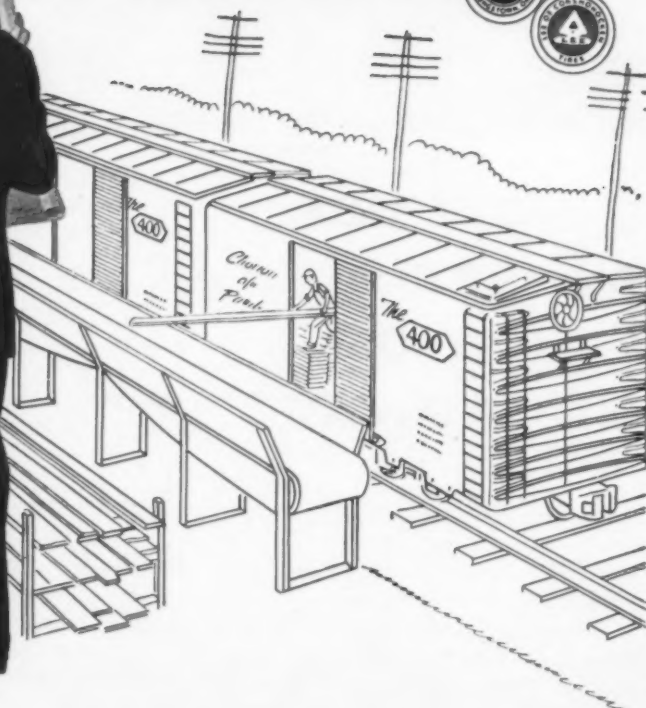
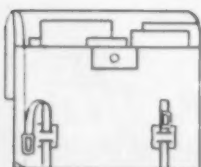
## REPUBLIC CONVEYOR BELTS SAVE LABOR

"Our lumber company greatly reduced labor costs with Republic Record Maker Conveyor Belting. At one spot alone, where rough oak planks are unloaded from box-cars, work efficiency has increased four times. The belt, in operation for more than 4 years, has long since paid for itself."

Republic Conveyor Belts eliminate hours of tough, unnecessary labor on the job. Republic Products, like the lumber-hauling Record Maker Conveyor Belt shown below, are made of quality materials especially chosen to give extra performance at minimum cost. Your Republic Distributor is an expert analyst who can quickly tell which of the hundreds of Republic Industrial Rubber Products is best suited to your line of work. Contact him today, or write us direct. Remember, for a half-century the Republic name has stood for performance through quality. For best results "Try Republic First!"

### INDUSTRIAL RUBBER PRODUCTS BY REPUBLIC RUBBER DIVISION

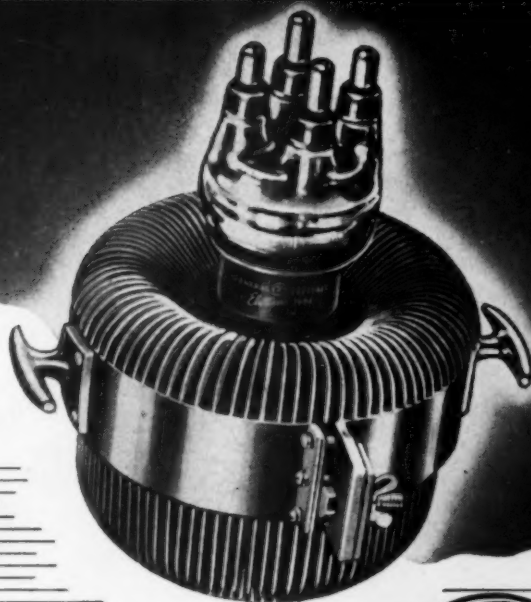
Lee Rubber & Tire Corporation  
YOUNGSTOWN, OHIO





# G-E TUBES *FAST* FOR H-F HEATING

You get them as soon as you need them . . . right at your door!



- ✓ G. E.'s complete line includes the right types for sockets in your factory.
- ✓ Your G-E tube distributor makes same-day (often same-hour) deliveries from local stocks.

**D**ELAY is expensive when you need a new tube for an electronic heater. Waiting for a tube replacement means fewer products brazed, welded, or heat-treated; that much more idle time of the operator to be charged away.

The right tube . . . quickly . . . will chase away the shutdown phantom who feeds on profits. Here General Electric's full line of types for h-f heating comes to your aid. In the 15 G-E power tubes for heating—the 7 rectifier types—will be found the exact tube you need to restore heater operation.

And you get G-E replacements fast! Near you is a G-E tube distributor who carries in stock the types you need. He's waiting for your emergency phone-call . . . is ready to make delivery as rapidly as four wheels and gasoline can reach your door.

Check your G-E distributor's phone number now, to have it available when you need the fast, competent tube service he offers! The types he sells are new, operable, fully covered by G-E warranty. They're your best tube investment, as well as your best protection against delays from heater shutdowns. *Electronics Department, General Electric Company, Schenectady 5, New York.*



(At Top)

## **GL-889R-A** Power Triode

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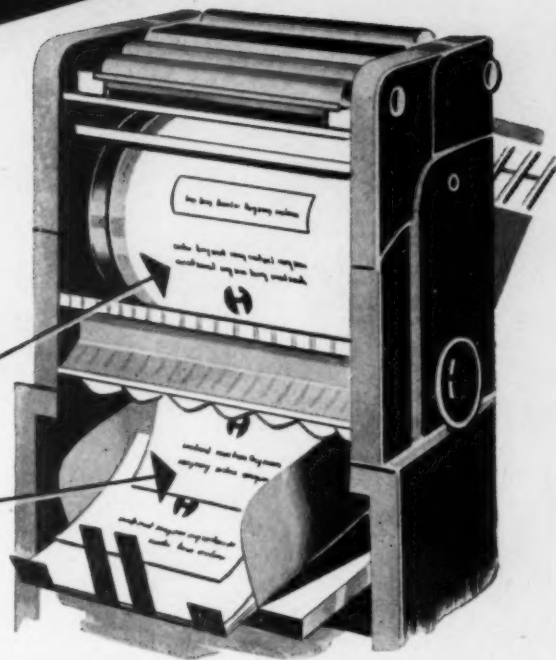


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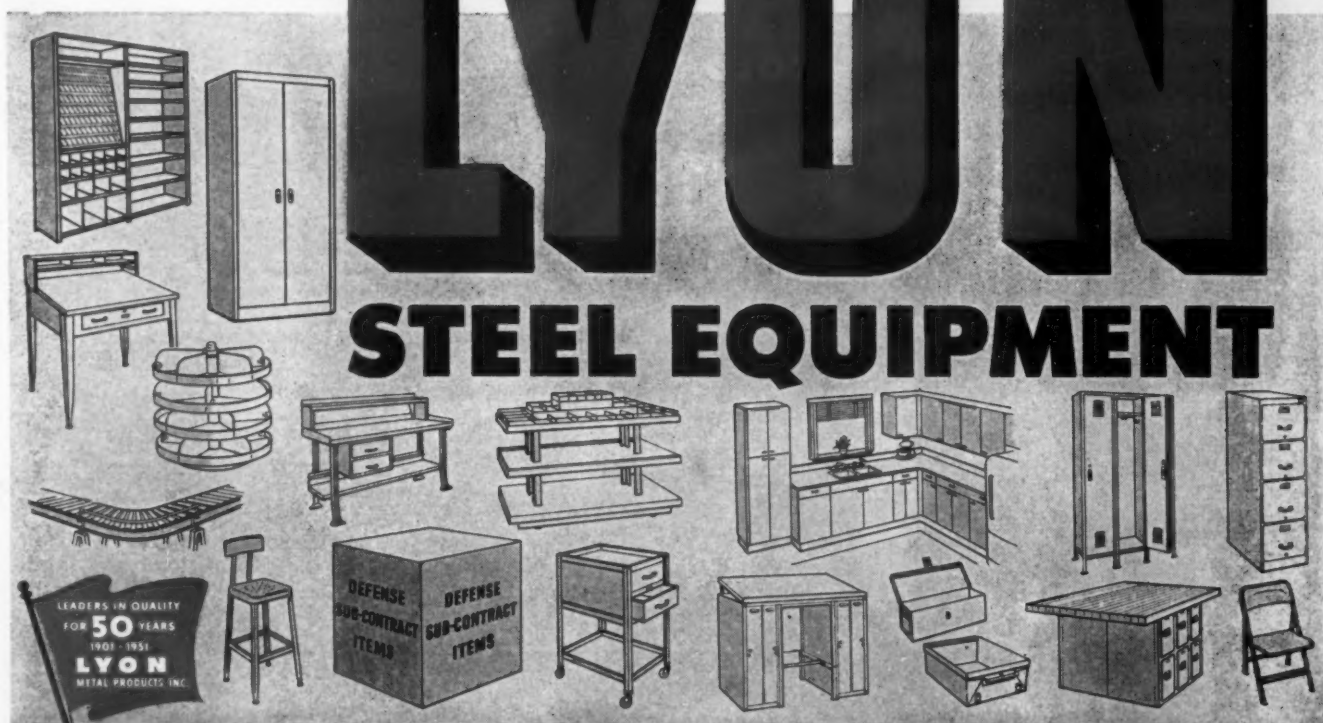
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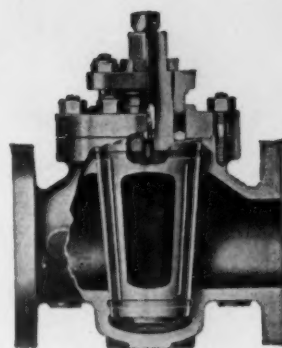
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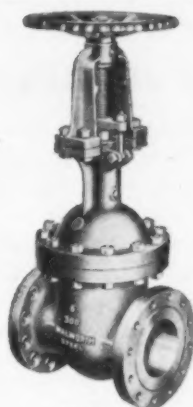


# ● VALVES

# ● PIPE FITTINGS



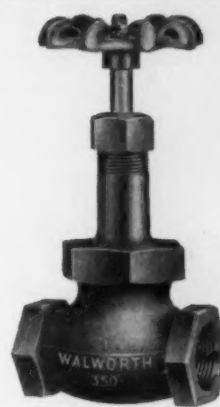
Walworth  
Lubricated Plug Valve



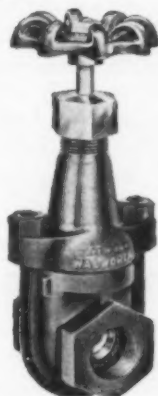
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VOL. 30, No. 1

JANUARY, 1951

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JANUARY, 1951

You Are A Part of O. D. M. ....	67
Every Purchase Is an Emergency!.....O. L. Williamson	71
Ford Inaugurates "Suppliers' Day" .....G. E. Henry	72
Maintaining Quality Standards on Fine Papers .....Dave Henderson	74
PURCHASING Reports on Purchasing Opinion	
Can a Foreign Economic Policy Prevent Material Shortages? .....	77
Check Up on Your Suppliers' Business Health .....J. G. Davies	79
Acceptance Sampling .....S. E. Bryan	81
Purchasing for Plant Maintenance .....	85
Fit Fire Protection to the Hazard .....	87
Check List for Maintenance of Industrial Wiring .....	87
MRO Supplies Embrace Wide Range of Products .....	88
A Guide to Proper Floor Cleaning .....	89
Check List for Maintenance of Leather Belts .....	89
Purchasing Lubricants on Buyer's Specification .....T. O. English	90
Techniques of Purchasing .....J. G. Jones	94
Control Pattern Is Based on CMP .....A. N. Weckslar	96
How Kaiser-Frazer Streamlined Purchasing .....D. G. Baird	98
Where We Stand	
Commodity and Business Trends .....	103
A 10-Point Plan for Peaceful Persuasion .....D. Markstein	111
Science Against the Sea .....	113
Purchase Budgets for Inventory Control .....E. A. Lyon	116
Validity of Verbal Purchase Contracts .....Leo T. Parker	120
Purchasing Office Equipment and Forms .....Elsie Gruber	168

## MONTHLY FEATURES

Purchasing Previews .....	13
Late Trade Bulletins and Catalogs .....	19
F. O. B. ....	30
Highlights .....	69
New Products — Ideas .....	130
Office Equipment and Supplies .....	165
Among the Associations .....	186
Personalities in the News .....	226
Letters to the Editor .....	288
Buyer's & Seller's Mart .....	290
Index to Advertisers .....	292

65

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**Names and trade-marks are important to buyers . . .**

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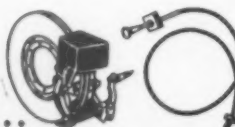
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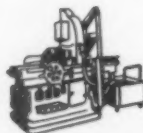
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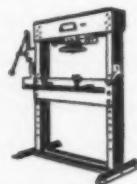
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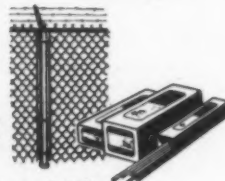
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## YOU ARE A PART OF O. D. M.

**T**HERE has never been a moment of doubt, since the beginning of the Korean crisis, that American industry would mobilize promptly and effectively for its share in the national defense whenever the word was given. The public mind and the business community have seen this emergency shaping up, and have indeed been somewhat impatient for the call to action.

The declaration of national emergency and the appointment of Charles E. Wilson as Director of the Office of Defense Mobilization, with broad authority, have clarified the situation and provided the leadership behind which industry can rally with enthusiasm to prove the strength, the resources, the productive capacity, and the will of the American system which is being challenged in the world today.

The plan of action will unfold rapidly in the months ahead. The leadership of a man of Mr. Wilson's proved stature and ability in industry and the public service assures sound objectives, a sound program, and sound administration. In many respects, the activities and responsibilities on the home front will be those of procurement. For the time being, those responsibilities rest largely in the purchasing offices of American industry, to see that the flow of materials and products is maintained and channeled to most effective use.

This is our program, the life line of free men and free nations throughout the world, bigger than any question of individual competitive interest or profit. Every other consideration is subordinate to these vital tests:

Is it essential?

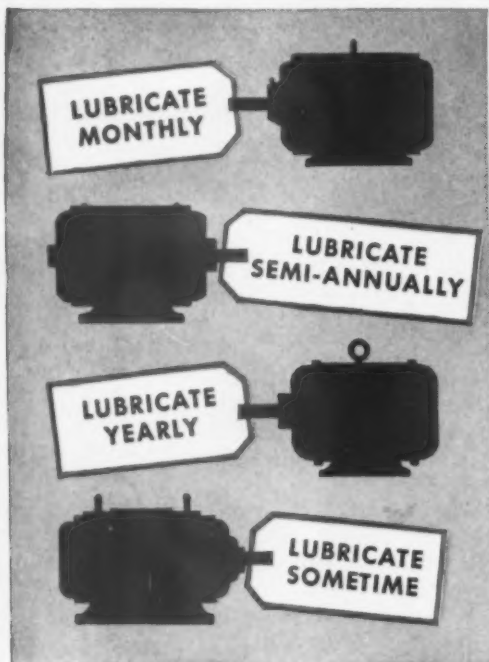
Will it help the defense effort?

Is it being produced and procured most efficiently for maximum service to the nation?

American industry has met the challenge before. Let us so meet it in 1951 that the way of free peoples may never be challenged again.

*Stuart F. Hearnitz*

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J-21559

— If you figure LIFE-COSTS . . . you'll figure LIFE-LINE —





# Highlights

This issue's important features  
summarized for the busy reader



A forthright discussion of one of the moot questions in purchasing policy is the article on page 90, championing the use of buyer's specifications in setting up a Plant Lubrication program. Without taking issue with the competence of the equipment manufacturer or the supplier of lubricants to recommend proper grades of oils and greases for specific applications, the author points out the complex purchasing and storage problems that ensue from following such a policy. In contrast, he outlines a policy of classifying use requirements and standardizing on fewer grades, based on the properties of lubricants and plant experience in their use. The primary tests are listed and evaluated as to their significance in selecting the proper product.

The foregoing article is one in a series (pages 85 through 93) dealing with the whole problem of purchasing the wide variety of items required for purposes of Plant Maintenance. This is a timely topic, keyed to the Plant Maintenance Show being held this month in Cleveland. Costs in this category are frequently hidden in the more carefully controlled costs of product components and manufacturing. The most constructive policy is preventive maintenance, and the purchasing agent's interest extends to the use and application of the materials as well as their procurement. Check lists on some of the important items are included.

Ford Motor Company has inaugurated a new and unique approach to the ever-present problem of developing cordial relations between the purchasing company and its suppliers, by setting a Suppliers' Day at each of its divisions. The maker of component parts is thereby given an opportunity to see his product as a part of the complete automobile, increasing his satisfaction and pride of accomplishment and gaining the feeling that he is a part of the team that makes the Ford possible. At the same time, he meets some of the men who are using his product and acquires a new appreciation of their needs and problems. Our representative attended one of these sessions and reports on it for you on page 72. It is his observation that the suppliers like the idea, and that both parties benefit.



This month's Guest Editorial (page 71) is contributed by Ollie Williamson, N.A.P.A. Vice President for District No. 7. Buying for a ship repair yard involves unpredictable requirements with strict time limitations, but competent purchasing meets the challenge.

A prominent management engineer analyzes the range of purchasing Techniques that are available to the industrial buyer and the particular circumstances in which each is applicable. Here is a study that gets right down to fundamentals on matters of choice and decision that the purchasing agent faces every day. Turn to page 94.

Business is moving swiftly into a period of stringent Governmental Controls over materials and their distribution, and the purchasing agent must keep abreast of these developments to maintain his flow of supplies. Our Washington editor, on page 96, reports on how this program is shaping up, following the pattern of the Controlled Materials Plan of World War II.

In the year-end check-up on purchasing performance, looking ahead to ways and means of doing a better job in 1951, it will be well for the purchasing agent to devote some time and effort in evaluating the Business Health of his suppliers. In the long run, it is the performance of suppliers that determines the effectiveness of the purchasing program. In the critical days ahead, it will be more than ever important to have strong and reliable sources of supply. The timely article on page 79 presents some pertinent and practical suggestions on how to read and interpret the information brought to you in annual reports of supplier companies.



The goal of every purchasing executive is to do a bigger job with Simpler Methods and Fewer People. That is exactly what has been accomplished in the purchasing department of the Kaiser-Frazer organization. The story on page 98 tells how it was done. You will find some good suggestions in the experience at K-F.

Leo Parker's legal article this month (page 120) was compiled in direct response to a reader's problem and inquiry. Have you ever wondered just how binding a Verbal Contract may be? Have you ever placed orders by phone, subject to written confirmation? For your own peace of mind and legal protection, better get acquainted with how the courts view such transactions.

Are you making full use of these monthly departmental features compiled especially for the purchasing agent? The **Washington Previews** (page 13) keep you informed on current developments in governmental policy. Another section is devoted to **Office Equipment and Forms** (page 165). Informative **Trade Bulletins and Catalogs** listed on page 19 are yours for the asking. **New Products and Ideas** are also reported (page 130).

**IN TIMES OF STRESS . . .**

# **America is Fortunate in its Whse Steel Service**

In national emergencies America is fortunate in having a well developed steel warehouse industry with facilities strategically placed throughout the nation—taking care of the day to day requirements of steel users.

As you know, the steel distributor serves as a collective source making steel quickly available to all industry—and thus reducing the need for larger individual inventories. In this way the greatest turnover is developed and a maximum tonnage is always in use.

Naturally only a portion of our country's production requirements can be served from warehouse stocks but very often top production can be maintained only through quick shipments of steel that is missing. The essentiality of these warehouse services has

been proven again and again—in every national emergency.

Here at Ryerson, the Korean situation has naturally increased the demand for steel. Requirements, growing directly and indirectly out of the new conflict, are adding to the tremendous demand that has existed—almost entirely without let-up—since the beginning of World War II.

In spite of this increased pressure, we are making every effort to serve steel users promptly. In times like these, shortages are inevitable. But we do have a large though uneven stock on hand in our nation-wide steel service plants. So for any steel you need, contact your nearby Ryerson Plant. We'll do our level best to fill your order.  
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# EVERY PURCHASE IS AN EMERGENCY!

By O. L. Williamson

**T**HE buyer for a ship repair yard is constantly faced with the necessity of living up to a very compelling slogan:

*"The Ship Must Sail on Schedule!"*

With this in mind, he probably has to contend with more emergency requirements than the purchasing agent in any other line. He never knows today what will be required tomorrow, and his is the most diversified form of purchasing imaginable—everything from needles to steel masts, from small motors to steam turbines, parts for a foreign-made engine, or a diaphragm for a discontinued pressure regulator. Invariably, nothing is requisitioned until it is wanted for installation.

Thanks to rapid modern means of communication and transportation, these emergency requirements are generally met.

Some purchasing agents are able to consider cost, quality, and delivery in that sequence when they place an order. For the purchasing agent of a ship repair yard, the order must be reversed. Delivery comes first, for even one day's delay in receiving the material may mean a large demurrage penalty for not getting the ship out on schedule. Price is the last consideration. Nevertheless, the buyer must be familiar with prices, lest some unscrupulous concern should attempt to take advan-

*(Please turn to page 272)*

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**O. L. ("Ollie") Williamson** is Purchasing Agent for the Merrill-Stevens Dry Dock & Repair Company at Jacksonville, Florida. He is currently serving as Vice President of the National Association of Purchasing Agents for District 7, which includes the Alabama, Chattanooga, East Tennessee, Florida, Georgia, Louisville, Memphis, Mississippi, and New Orleans Associations.



A native Floridian, he graduated from the public schools of Marion County and McIntosh High School, supplementing this with Business College training in accounting and business administration at Jacksonville. He has been with the Merrill-Stevens organiza-

tion since 1917. Starting in clerical office work, he became successively Office Manager, Buyer, and Purchasing Agent. During the hectic days of World War II, when the shipyards were working feverishly around the clock and around the calendar, he was named to the important responsibility of Director of Purchasing and Material Control, supervising the all-inclusive activities of purchasing, inventory, material control, stockrooms, warehouses, and steel storage.

Mr. Williamson is a charter member of the Purchasing Agents Association of Florida, and has held every office in that organization plus numerous committee assignments. In 1949, he was general chairman of the Sixth Annual Conference, Purchasing Agents of the Southeast. In his capacity as District Vice President, he presided at the official sessions in connection with the Seventh Annual Conference at Chattanooga last October.

He is active in the civic, social, and religious activities of his city. For the past ten years he has served as recording secretary of the Men's Bible Class of the Main Street Baptist Church. He is a member of the Propeller Club, Traffic Club, National Defense Transportation Association, Dad's Club, and the Research Institute of America. His hobbies are hunting, fishing, boating—and a small granddaughter, Mary Ann Williamson.



## FORD Inaugurates "Suppliers' Day"

By G. E. Henry

**I**N this era of bewildering special "days" for this and for that, the Ford Motor Company recently inaugurated an industrial "Suppliers' Day" that has proved eminently practical and successful. "Suppliers' Day" is a plant visitation day for suppliers, the benefits of which are threefold:

It gives vendors a personal acquaintance with Ford plant managers, purchasing agents and buyers; it enables vendors to gain first hand a clear picture of Ford operations and methods; and, third, but by no means least, it gives them a preview of the Ford Company's new color motion picture "6,000 Partners" which was filmed to show the interdependence of a large industrial company, such as Ford, and its suppliers and employees.

The development of the film was conceived by Irving Duffy, Ford Motor Company's Vice President in charge of Purchasing. He suggested making the film because he felt it

would be an effective vehicle for acquainting every member of management in the Ford plants and sales offices with the importance of the role played by each of the Ford company's 6,000 suppliers. It was his opinion that the film would help them to understand how these suppliers contribute to job security, to the success of the Ford Motor Company, and to the satisfaction of Ford customers.

The film accomplishes that objective in a convincing way. It shows the important relationship of the Ford Motor Company to each of its suppliers, and how the consumer dollar for Ford products is distributed throughout the nation in the purchase of the thousands of materials and components used in Ford production and assembly. It demonstrates that thousands of people share in the building of an automobile, enriching not only their own lives but the lives of millions of others.

Some 250 vendors were "Suppliers' Day" guests of the Ford Company at the Metuchen assembly plant.



Irving Duffy, Ford Vice President in charge of Purchasing, who conceived the film "6000 Partners".

In a broad sense, the film is a dramatization of America's industrial machine and how it needs all sizes of business—small shops, medium size firms and large companies to assure smooth operation, employment and national prosperity. In the case of the Ford Company it shows that Ford cannot build an automobile alone, that Ford needs its 6,000 partners—the raw materials and the parts they sell and also their specialized knowledge in the development of better products.

"Suppliers' Day" programs have been held in fifteen Ford assembly districts throughout the country—Metuchen, N. J., St. Louis, Kansas City, Chicago, Atlanta, Chester, Pa., Norfolk, Va., Richmond, Calif., Dallas, Memphis, Somerville, Mass., St. Paul, Pittsburgh, Los Angeles and the parts manufacturing plant at Ypsilanti, Michigan.

Each district has a Community Relations Committee, on which each office and plant in an area has representation. The "Suppliers' Day" programs are held under the auspices of these committees. A typical "Suppliers' Day" was that recently held in Metuchen, N. J. for the district including the Metuchen Lincoln-Mercury plant, the Edgewater

Ford assembly plant, and the Harborside International Division. Charles J. Seyffer, a member of the New York-New Jersey Community Relations Committee, who is north-eastern regional sales manager for the Ford Division, was chairman.

These divisions paid out more than \$11,000,000 to vendors last

educational value of the film, and the impressive evidence it presented on the interdependence of all units of American industry, big and little. They also expressed their pleasure at meeting, face to face, the purchasing men and buyers with whom they did business. It is estimated that but three out of ten of the suppliers

had previously visited the plants they were selling to.

One of the suppliers in describing "Suppliers' Day" stated: "It is a very, very good idea. It brings the supplier and the man he has been doing business with much closer together. This is especially important in times like this when conditions are so uncertain. It gives the supplier the opportunity to see the problems that face his customer. It helps us to cooperate with him more effectively, and to devise ways to be of greater service to him."

Another said: "These meetings acquaint us with the big problems they have, and the importance of getting their materials in as quickly as possible. We have a better understanding of what it means to work on a 30-hour inventory for some products, and the problems that the supplier has to help solve. Also, such meetings build up a closer and more friendly relationship with the people we sell to."

And another who has been supplying the New Jersey plants for the past four years said that the plant visit gave the supplier an insight into the operations, the need for complete cooperation, as well as the need for working closer with the Ford Company on quality control.



Visitors were supplied with identification passes before starting on the plant tour.

year in New York, New Jersey and Connecticut, this purchasing volume being distributed to some 600 vendors. A similar amount was spent for outgoing and incoming transportation during the year.

Invitations to the Metuchen "Suppliers' Day" were restricted to suppliers whose Ford billing during the year was \$1,000 or more. About 250 representatives of supplier firms took advantage of the opportunity to visit the Metuchen plant, where they were greeted by various officials of the district, including Tony Brazaitis, Purchasing Agent at Metuchen, Fred Schumann, Purchasing Agent at Edgewater, and Frank Smith of Ford International.

The visiting suppliers toured the plant in groups of 20 with the guidance of plant men, inspecting every phase of the operation from the offices to the assembly line where it takes 74 minutes to assemble a car ready for shipment. After a showing of the new Ford and Mercury 1951 models, Chairman Seyffer and his fellow officers were hosts at a cocktail and luncheon meeting, at which the film "6000 Partners" was screened.

Suppliers commented upon the



★  
The precision operations on the assembly line were a revelation to many of the visitors.



★  
Vendors had an opportunity to see the products they had furnished installed in the new 1951 models.

## Maintaining Quality Standards on Fine Papers

**Photo Story**  
**by Dave Henderson**

**W**HAT goes into the production of a quality product? Quality materials, good equipment, experience, and skilled personnel are all basic, but they tell only a part of the story. Paralleling the production process is a continuing process of technical checking, tests, and controls assuring that materials, equipment, and skills are kept in line, directed toward the desired quality and uniformity in the end product.

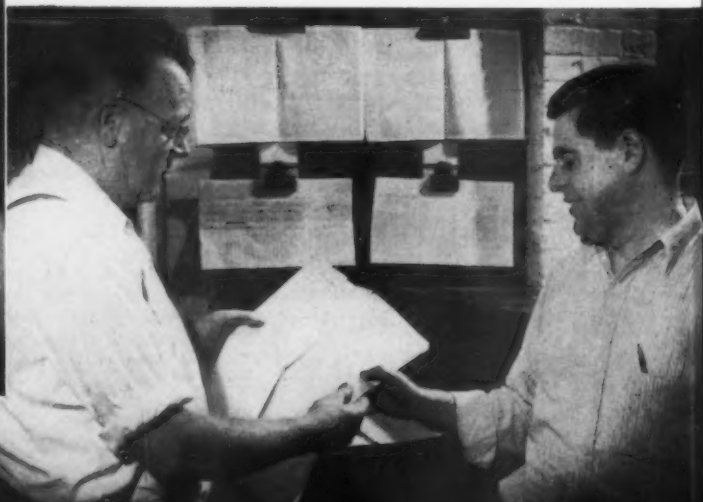
The accompanying photographs were taken at the Rising Paper Company mill at Housatonic, Mass., illustrating the dozen or more tests that are made at hourly intervals during production and on the finished product in the manufacture of fine bonds, indexes, writings, vellums, bristols, texts, and technical reproduction papers.

Each paper machine has automatic built-in consistency regulators and scales to check weight of paper as it is being made. In addition, samples are taken every hour for rechecking of weight and complete laboratory testing.



Williams Freeness Test, made on rag and pulp mixtures just prior to their introduction to the paper machines. It is used to assure uniformity with previous runs of the same quality paper (or modifications to meet special specifications), and uniformity of stock across the full width of the machine. It also determines the speed with which process water can be removed from the stock and, therefore, the speed at which the machine can be operated.

The hourly tests include comparison with "standard" sheets for color, crispness, and other properties. These standards are run at frequent intervals to match original specifications of the various grades.

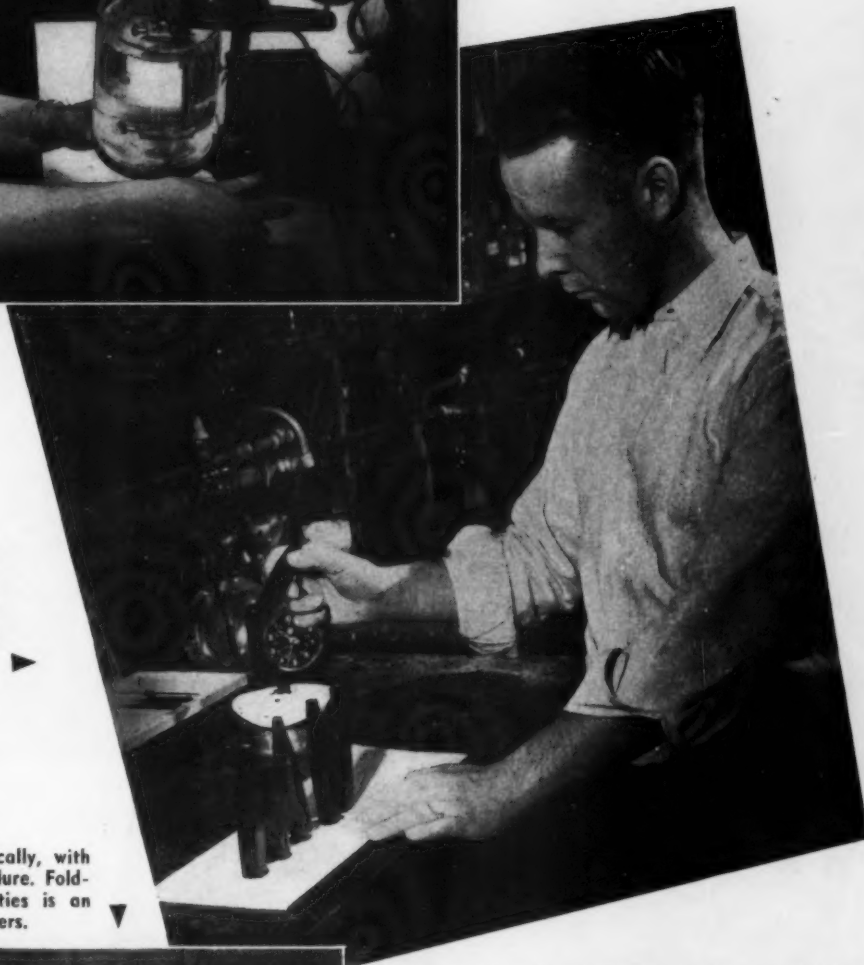






▶ In the Stretch Test, paper sample is completely immersed in water, with a weight attached. The ability of paper to withstand this test is primarily dependent on the thoroughness with which the raw stock is mixed and on the interior sizing.

Wax Pick Test is applied to papers for offset lithography or gravure papers. Using standard waxes of known degrees of adhesiveness, it is a constant check on surface sizing, insures that printing plates will not pick up small pieces of paper stock and mar the final appearance of the printing job. ▶



Schopper Test folds paper samples mechanically, with and against the grain of the paper, until failure. Foldability without impairment of surface qualities is an important property in high grade record papers. ▼



▼ Williams Smoothness Test forces a constant volume of air at known pressure over a small segment of the paper surface, and measures the length of time it takes the air to escape. This test is applied to vellums and air-dried cockle finish bonds, and to super-calendared and plated surface finishes.





▶ Mullen Test determines the bursting strength of the paper. It is a reliable indicator of such properties as the structure of the web, the composition of the fibres themselves, and the adhesive qualities of the interior sizing.

Laboratory-type Light Meter tests the gloss of a sheet of paper by measuring the reflection of light from the paper surface, compared with established standards.



▶ Inspection under a standard microscope checks the rag content and distribution of rag fibres in the paper sample. All rag content papers are guaranteed to contain a certain percentage of rag fiber. This test is a check against the guarantee.



▶ The final check on quality consists of hand inspection. Skilled inspectors turn over each finished sheet, scanning both sides for any defects that may have slipped by the sampling process and the technical and mechanical tests.



## Foreign Economic Policy

### Prevent MATERIAL SHORTAGES?

Gordon Gray, special adviser to the President, has submitted a number of provocative recommendations on the future course of our foreign economic policies and programs. Among the proposals are several aimed at increasing supplies of scarce materials and channeling them to help the free nations. We have asked purchasing agents, who have a direct and practical interest in the question of material shortages, for their opinions on those portions of the Gray Report related to procurement. The report's recommendations are incorporated in the questions.

① In your opinion, would control of scarce materials "for common defense" tend to unify the world politically or to emphasize national interests?

Greater unification  45 %  
Greater nationalism  55 %

② What conditions, if any, should be attached to U.S. aid in expanding foreign output of scarce materials?

Following, in order of frequency, are the conditions suggested most often:

Privilege of specifying repayment in materials  
Right to allocate output in world emergency  
Preferential assurance of supply  
Participation in management  
Long-term contracts at stable prices  
Allocation of output regardless of emergency

Others include: supervision of distribution; control over usage; guarantees of production; guarantee of manpower in emergencies.

③ Do you favor giving the President unilateral authority to reduce or eliminate import duties as an anti-inflation measure?

Yes  38 %  
No  62 %



④ Should the U.S. Government

(a) Extend the Reciprocal Trade Agreement Act ?

(b) Seek further general tariff reductions ?

(a) Yes ☐ 85%

No ☐ 15%

(b) Yes ☐ 73%

No ☐ 27%

⑤ Do you favor repeal of present "Buy American" legislation in respect to Government purchases, including stockpiling ?

Yes ☐ 64%

No ☐ 36%

⑥ Do you agree that the U.S. should assume a greater share of world rearmament costs to permit Western European nations to develop greater production of goods for export ?

Yes ☐ 21%

No ☐ 79%

## WHAT THEY SAY

"Our adventures into internationalism for the last decade have not only bankrupted the nation, but have completely and miserably failed to accomplish any of the promised objectives. We are the greatest nation of suckers the world has ever seen."

"Western European nations must demonstrate a much greater will to help themselves before American aid in any form can be considered a sound investment."

"There should be a balance between armament production and consumer goods production in the U.S.A. as well as Western European nations and our other allies."

"Rearmament costs of each nation should be equal to per cent of production. Countries without material and production resources could balance with volunteer workers."

"Any scarce strategic material which we supply to Europe or which we pay for should be used only for defense production."

"My answer to 1 (greater unification) is based on the assumption that our handling of the problem would be of the highest diplomatic, tactful order and that we could demonstrate the wisdom to the other peoples of 'throwing in' with us".

"We must in this hour of emergency forget petty interests of particular groups and by adopting an international viewpoint of economic development of all our allies thus assure our national survival."

"U.S. has been underwriting world policy with money and manpower. Should have a major say in administration."

"We are not getting a good return for our money, so why throw more good money after bad. I'm for the U.S. Let the other countries stew in their own juice."

"Pouring money into industrial strength subject to capture by enemies seems futile unless accompanied by a determined effort by the European countries themselves to raise sufficient military strength to guard these facilities."

"We should put it strongly to E.C.A. countries that the feed box must be closed at an early date. They cannot become permanent leaners."

"Why spend millions for guns that will finally be turned on the United States? Spend these dollars to preserve, not to kill. Counteract two Russian lies with one American truth."

"A brilliant foreign economic policy, intelligently promoted and administered, could prevent virtually all our ills — not excluding war itself."

## What you can learn from an annual report

By Julian G. Davies

NO sooner do we complete our share of the annual inventory chore and total up the results of a year of effort, heave a sigh of relief, and subside into the more or less even tenor of our ways, than the morning mail deposits on our desks the evidence that other companies too have been appraising the year's operations. For the next several weeks we receive a steady procession of annual financial statements issued by businesses with whom we have had dealings in the past, or may have in the future. Look them over. Many of these statements provide us with vital information which it would be folly to ignore. It may help to make the next year's purchasing record better.

### **Why do annual statements concern the P.A.?**

Because, with careful interpretation, they enable us to determine in what direction our suppliers are headed, and the trend of thinking on the part of their owners, directors, and executives. If, for instance, the shareholders are chiefly interested and habitually clamoring for ever-increasing dividends, to the detriment of more modern equipment or an improvement in the liquid position of the company, we who purchase its products may expect to suffer. In the larger corporations, where the shareholders usually have little to say so long as the companies continue to enjoy reasonable prosperity and pay satisfactory dividends regularly, the attitude of the directors and management is of prime interest to us. This attitude is directly reflected in the annual statement.

Thus we have a definite interest in scanning our suppliers' record, and should welcome the opportunity that the annual statement affords. In many cases these reports are not widely distributed and we must de-

pend on financial newspapers for our information. In the case of private corporations, where there is no public trading in the capital stock, we must rely on information obtained through credit agencies. In such cases, our own Credit Department can obtain the statements for us and aid us in their interpretation.

### **What is the first thing to look for?**

Like the supplier company's shareholders and management, we want to know how the volume and profit in the year's operations compares with those of the past year or two. If the profit is appreciably higher, and if it seems to indicate an over-generous return on invested capital or on total annual sales (unfortunately, sales figures are frequently omitted from annual reports), we might be warranted in using this fact to negotiate lower prices on our purchases from a sup-

plier so comfortably situated. Labor does not hesitate to use such statistics as a lever in negotiating for a redistribution of the profits, and the customer is also a party at interest. There are, however, other factors to be considered before taking this step. Let us look at the information first as an indicator of the company's business health and the effectiveness of its management.

### **How is the profit used?**

Compared with previous years, was a reasonable proportion of the profit applied toward the acquisition of additional plant and equipment, as reflected in the fixed assets, or in the paying off of indebtedness, or in other activities which will add to the soundness of the company and thereby benefit its customers, directly or indirectly? Was it added to surplus, where it will be available for such improvements later on? Or was a larger proportion than usual paid to the shareholders?



## **Check Up on Your Suppliers' Business Health**

### **What about working capital?**

Next in importance to the customer and his purchasing agent is the trend in working capital, the difference between current assets and current liabilities. Is it becoming more convenient financially for the company to carry on its business activities, or are these becoming restricted through a growing lack of funds? This is of prime concern to the purchasing agent dependent on the supplier for prompt and reliable deliveries. As a general rule, the ratio of current assets to current liabilities should be at least  $1\frac{1}{2}$  to 1; a ratio of 3 to 1 affords much greater assurance of satisfactory future service.

### **Is the inventory high?**

Also, what do current assets and current liabilities consist of? Is inventory significantly higher now than in previous years, after due allowance for higher commodity prices? If so, it may provide assurance of satisfactory supply conditions in the immediate future, particularly if it comprises a generous stock of materials known to be in short supply throughout the country as a whole. On the other hand, the over-all inventory figure may not tell the whole story. It may represent a shortage of certain key commodities in which we are particularly interested, counterbalanced by an unhealthy preponderance of other goods. Careful questioning of the sales representative should be directed to learning just how the company is situated in regard to the materials affecting the lines we buy.

Nor should it be forgotten that burdensome inventories have proved disastrous in previous periods of sharply falling prices, and this undoubtedly will happen again. How does the supplier's inventory policy compare with your own?

### **How is the company's credit?**

What is the amount of the supplier's bank loans, compared with previous years? If the banks should suddenly decide to curtail credits drastically, is such a move likely to squeeze the supplier uncomfortably, to the detriment of his customers as well as of himself? It has been characteristic of banks that they are glad to raise a financial umbrella in fair business weather, but are quick to snatch it back at the approach of a storm.

How do his accounts payable compare with accounts receivable?

Ordinarily there should be a generous excess of receivables over payables if the concern is in a comfortably liquid position. Nor should we forget that frequently a concern hard pressed for cash will defer payment of its bills during the last month or two of its fiscal year in order to bolster its cash and bank position, thus creating a fictitious appearance of prosperity unjustified by all the facts.

We should remember that the financial position at year-end usually indicates a more favorable position than has prevailed during the balance of the year. Particularly when the financial position is not overly favorable, as the year-end approaches, special efforts are made to collect accounts due, to complete and ship goods in process, and to bring bank loans to the irreducible minimum in order that the financial statement may present the best possible picture.

In smaller companies, the amount of life insurance carried on the lives of key executives is often an important factor, helping to insure uninterrupted operations in the event that one or more of these officials is unexpectedly removed by death. So important is this that, before making extensive loans, banks often insist on the company acquiring a generous amount of life insurance, with the proceeds payable to the bank in the event of death, to provide additional assurance of their loans being repaid. If this is important to banks, it should not be overlooked by the customer either. While mere money cannot fully compensate for the unexpected demise of a key executive, it can provide a very useful cushion in such a time of stress and be the means of continuous, uninterrupted production which is of prime importance to the customer.

### **Does the supplier maintain adequate reserves?**

Has a special reserve been set up in company funds to provide adequate protection against a sudden and drastic reduction in inventory values? Particularly when the materials chiefly dealt in are of the "sensitive" type, subject to wide fluctuations in price, with consequent opportunities for crippling inventory losses, prudence demands a generous allowance for possible or probable future losses.

A study of fixed assets and of depreciation reserves, and their relation to corresponding figures of pre-

vious years, can be highly illuminating. Any important increase in fixed assets may be interpreted as a determination on the part of the management to augment production or distribution facilities which will improve its competitive position and enhance its service to customers. We should be sufficiently interested to seek the answers to significant changes in this item.

The amount of income transferred to depreciation during the year, in comparison with corresponding figures for previous years, will often repay investigation. In other days, depreciation accounts were subject to much manipulation. After a year of poor business, in order to present a more favorable profit picture than actual results justified, depreciation was robbed in order that net profits could be increased. Conversely in exceptionally good years, a larger than normal amount would be transferred from net profit to depreciation, so that the year's profits would not appear inordinately large. More recently, the impact of income tax regulations has notably restrained this type of manipulation; nevertheless, this important feature of the annual statement should be scrutinized carefully.

### **How do annual statements influence buying policies?**

The value to the purchasing agent of an analysis of a supplier's annual report is emphasized when we consider the progress, or lack of progress, in the smaller and less firmly established supplier whose financial statement is not publicized. We may be relying on him to produce parts which are incorporated in our finished product. Should he be hampered in their manufacture, and fail to produce them as needed, our entire production in that line may be seriously disrupted. Even if we are merely contemplating placing an order with him, it is extremely important that we have reliable and up-to-date information regarding his financial responsibility.

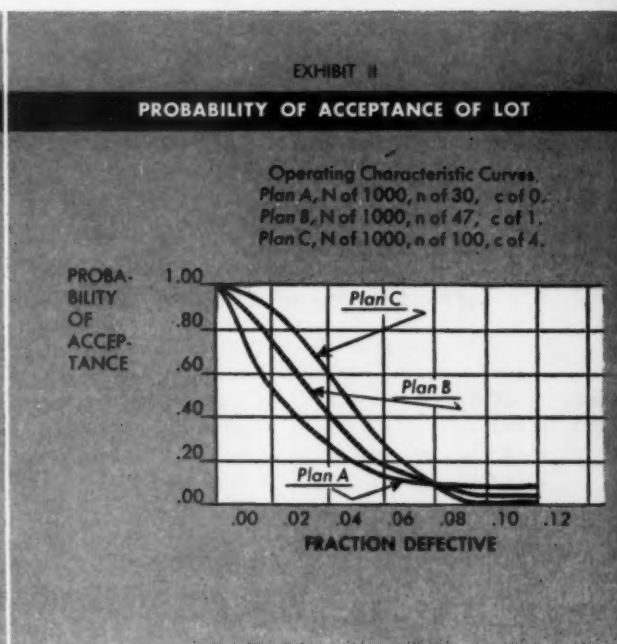
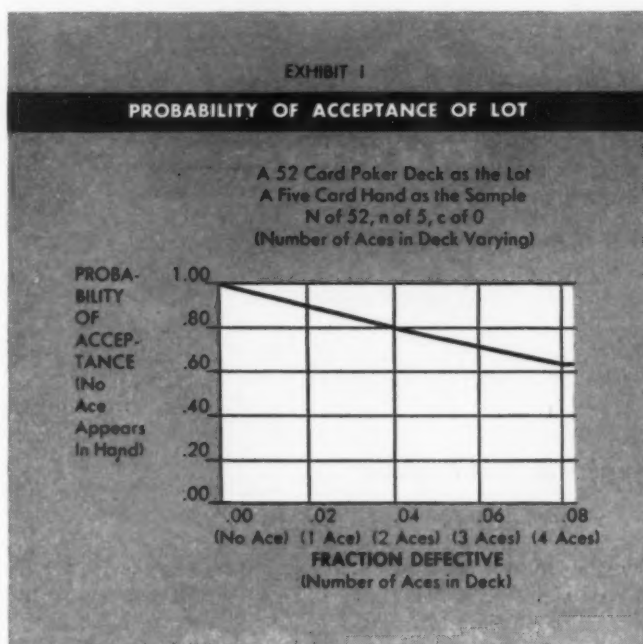
It is here that the report of the credit agency can prove to be of the utmost value. The information it contains is far more comprehensive than is contained in the customary published annual statement. Its usual purpose is to supply details on which a decision to sell or not to sell is based, and whether "Cash with order", "C.O.D.", or regular terms are to be applied. This report can be equally useful to the purchaser.

(Please turn to page 276)



# Acceptance Sampling – A Key to Lower Material Cost

By Stanley E. Bryan Associate Professor Michigan State College



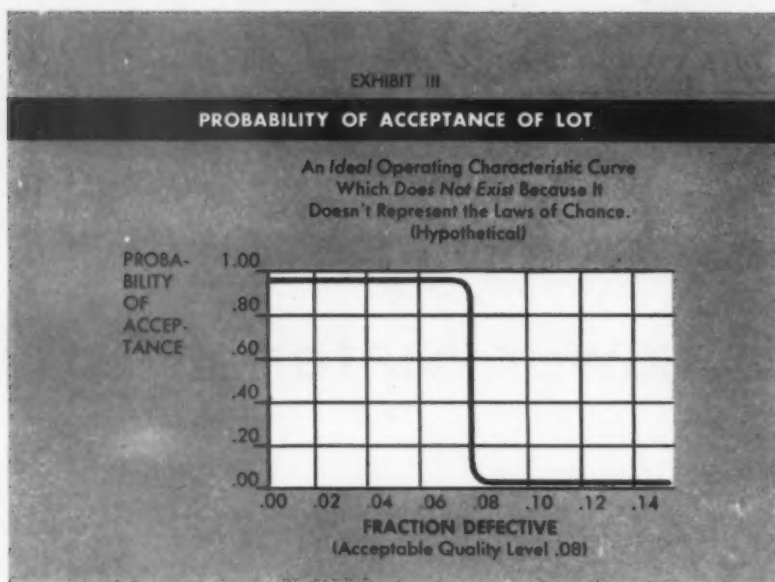
Don't discard the idea of statistical sampling without exploring what it can accomplish to help you in purchasing. And don't expect it to give you all the answers. The laws of probability can eliminate a lot of inspection expense within fixed standards of allowable error. Here is a non-technical explanation of what acceptance sampling is, what not to expect of it, and what it can do for the buyer.

BACK in 1832, Charles Babbage, who wrote what is probably the first organized book on industrial management, made a point which had modern purchasing in mind. Babbage said (*The Economy of Machinery and Manufactures*, p. 101): "The cost, to the purchaser, is the price he pays for any article added to the cost of verifying the fact of its having that degree of goodness for which he contracts." Modern purchasing agents have long recognized the fact that there are cost factors in material procurement which are not directly associated with their personal buying effectiveness, yet which challenge their attention.

Acceptance sampling is a challenge to purchasing agents. It offers a fruitful area for material cost re-

duction. It is a further challenge because it forces purchasing people to consider mathematical probabilities. And beyond their use in acceptance sampling, such probabilities are present in all purchasing activities. The laws of chance cannot be effectively repealed—"You can't beat the averages." Thus, as one sage advisor remarked: "If you can't beat 'em, better join 'em." Bacon would have told purchasing agents: "If a P.A. will begin with certainties, he will end with doubts; but if he will be content to begin with doubts he shall end with certainties."

The acceptance or rejection of incoming materials on the basis of sampling is not new. There are many rule-of-thumb procedures for



selecting sample size. One, for example, is to inspect 10%; if no defects are found, accept the lot. Such rule-of-thumb sampling plans are not scientific; they can lead to costly rejection procedures or costly reworks in later processing.

### The Science of Chance

The unfortunate thing about acceptance by sampling is that there appears to be either: (1) an uncritical acceptance of any sampling plan, or (2) an uncritical suspicion of all sampling. Neither attitude is correct. However, to correct such attitudes there must be developed some concept of the laws of chance.

There are limitations to acceptance sampling. The purchasing agent who is going to reduce material cost through the favoring of, or development of acceptance sampling, should realize what his company *will not get* in an acceptance sampling plan.

*First.* No acceptance sampling plan will insure against the acceptance of some defective articles. (Neither, for that matter, will 100% inspection.)

*Second.* Acceptance sampling is not effective if the material being submitted has been controlled in process by careful statistical quality control procedures. That is to say, it will not separate relatively good lots from relatively bad lots in such cases.

*Third.* The more effective the plan is in protecting the consumer (purchaser) from bad lots, the more probability is present that it will also reject good lots. This will cause the

producer (vendor) to become critical of the inspection and may lead to deterioration in vendor relations or higher prices charged to cover unwarranted rejections.

*Fourth.* Acceptance sampling operates in terms of fraction defective. In acceptance sampling an article is either "good" or "bad". If 50 articles are submitted and 4 are bad the net result is "fraction defective .08."

### Examples of Justification

In spite of these limitations acceptance sampling can justify itself: (1) where sampling is necessary because the article is destroyed in the testing, (2) where monotony in inspection is likely to cut down the effectiveness of 100%, or any num-

ber, of inspections, and (3) where cost of this type of inspection, even considering later costs attributed to defectives which escaped detection, are so much lower as to make it attractive.

### Operating Characteristic Curves

The first point of understanding is to know what operating characteristic curves are. Operating characteristic curves are just graphic representations of the law of probability applied to a particular set of circumstances.

The particular set of circumstances combines (1) a certain size lot,  $N$ ; (2) a certain size sample,  $n$ ; and (3) a certain size acceptance number,  $c$ . For example, when you deal a hand of five cards from a poker deck you are in effect taking a sample,  $n$ , of 5 from a lot,  $N$ , of 52. If you further assume that the 4 aces represent defective articles you have a lot with a fraction defective of approximately .08 (4/52). Exhibit I shows these relationships as an operating characteristic curve,  $N$  of 52,  $n$  of 5, and  $c$  of 0. The curve says that for a lot size of 52 and a sample size of 5 you have a probability of .75, approximately, of *not* getting an ace (defective) in your hand, assuming 4 aces in the deck (.08 fraction defective). Note that 75% of the time you will not get an ace even though there are 4 aces in the deck.

Exhibit I shows the probabilities of not getting an ace in your hand assuming a deck of 52 cards and assuming various fraction defectives in the deck (0 aces, 1 ace, 2 aces, 3 aces, and 4 aces). This is a very poor curve for accepting or rejecting the lot, as one desires to do in

EXHIBIT IV

**AVERAGE OUTGOING QUALITY**

(After Inspection Using Plans A or C)  
Incoming Quality .02 Fraction Defective  
All Figures Based on 100 Lots

	PLAN A		PLAN C	
	N 1000, n 30, c 0		N 1000, n 100, c 4	
Total Number of Pieces in 100 Lots	100,000		100,000	
Total Number Defectives in 100 Lots		2,000		2,000
Defectives Eliminated From Samples	0	0	190	190
Defectives Eliminated Rejected Lots	900	900	100	100
Total Defectives Remaining in Lots		1,100		1,710
Total Number of Pieces Left in Lots	99,100		99,710	
<b>AVERAGE OUTGOING QUALITY</b>	<b>1,100</b>		<b>1,710</b>	
	99,100 = .011		99,710 = .017	

acceptance sampling. The important point is that it is an *operating characteristic curve* exactly like those underlying all acceptance sampling plans.

In Exhibit II the particular set of circumstances chosen for Sampling Plan A is that there is a lot,  $N$ , of 1,000, a sample size,  $n$ , of 30, and that the lot will be accepted if no defectives appear in the sample, a  $c$  of 0. Suppose the lot had 20 defectives (20/1000 or .02 fraction defective). It has a probability of acceptance of .55. In the long run, and on the average, such a lot would be accepted 55% of the time.

Sampling Plan C, if used to inspect the same lot of 1,000 containing 20 defectives (.02 fraction defective), uses a sample of 100 and agrees to accept the lot if 4 or less ( $c$  of 4) defectives appear in the sample. Using Plan C, in the long run 95% of such lots would be accepted. However, note that if a lot with .08 fraction defective were submitted it would be accepted only 10% of the time. (Saying it differently, only 10% of such lots would be accepted in the long run.)

### Well Shaped Curves

Sampling Plan C is a fairly well-shaped curve. Of the curves presented it most nearly approaches an "inverse S." It accepts most of the lots that are only .02 fraction defective and will accept only a few of the lots that are more than .08 fraction defective. If .08 fraction defective were the acceptable quality level for such articles an ideal curve would reject all lots of more than .08 fraction defective and accept all lots of less than .08 fraction defective. Such an ideal curve is shown in Exhibit III, but *this is a hypothetical curve which does not exist because it does not represent the laws of probability.*

In general, the larger the sample size and the larger the acceptance number,  $c$ , the nearer is the approach to the ideal curve. This statement is a broad generalization which only represents a tendency and does emphasize the relationship of the acceptance number to the shape of the operating characteristic curve.

### Lot Tolerance Defective

In the exhibits it can be noted that the fraction defective plays an important role. The assumption must be made that some defectiveness is inevitable. However, in some manner the acceptable level of quality must be agreed upon between the producer and the con-

sumer (buyer). This is a matter of negotiation in which the purchasing agent should be represented. This level, usually expressed in terms of fraction defective, will be the standard for the vendor. He is not expected or required to furnish work freer from defects and he bases his costs and prices and his manufacturing and inspection on this standard. Of course the buyer hopes he will receive better quality than that stipulated, but, for the price, this level is the *lot tolerance defective* which he will accept.

### Consumer's Risk

Lot tolerance defective is an arbitrary figure which has been set, in Exhibit II, at .08 fraction defective.

The laws of probability prevent an ideal characteristic curve from

every part, limited only by the shape of the curve they would have to take. In the same way, by varying sample size and acceptance number, operating characteristic curves could be developed which would interlace themselves over all parts of the grid. Now, in the ocean example, suppose it was decided that all ships must arbitrarily pass through a certain point of stated latitude and longitude. A point of reference would thus be established which would eliminate a vast number of routes valueless for the purposes at hand.

### Acceptable Standards for Acceptance

The "stated latitude and longitude" of acceptance sampling are the lot tolerance defective and the

Exhibit V

#### AVERAGE OUTGOING QUALITY LIMIT

For Plan A,  $N$  of 1000,  $n$  of 30,  $c$  of 0  
(In the Long Run the Highest Fraction Defective That Plan A Would Permit)

PROBABILITY OF ACCEPTANCE (a)	FRACTION DEFECTIVE (b)	AVERAGE OUTGOING QUALITY (a) x (b)
.55	.02	.0110
.30	.04	.0120*
.15	.06	.0090
.10	.08	.0080
.04	.10	.0040

\*AVERAGE OUTGOING QUALITY LIMIT

existing. It has already been emphasized that any sampling plan will accept some lots having a greater fraction defective than the lot tolerance defective agreed upon. This is the risk that the consumer (buyer) takes when sampling plans are used to inspect incoming material. However, it is possible to set a statistical upper limit on this risk. For example, it might be agreed that the consumer (buyer) will take no more than a 10% risk that the particular sampling plan will accept lots with a higher percent defective than the lot tolerance defective, if presented.

Consumer's risk is an arbitrary figure which has been set, in Exhibit II, at .10 or 10%.

The grid in Exhibit II can be likened to an ocean across which ships could proceed in any and

consumer's risk. These two arbitrarily defined percentages define a definite point through which all acceptable operating characteristic plans, for the purposes at hand, must pass. Note that the three curves (there could be many more) all pass through a point defined by a consumer's risk of .10 and a lot tolerance defective of .08.

### Average Outgoing Quality

Acceptance sampling allows a certain number of lots of worse than tolerance quality to get by the inspection. What do these worse than tolerance quality lots do to the average quality of material outgoing (outgoing from inspection to the buyer's production area)? For the most part the average outgoing quality will be higher than that incoming because the sampling plan



## EXHIBIT VI

## SELECTING THE PLAN WHICH MINIMIZES TOTAL INSPECTION

(Figures Based on 100 Lots of .02 Incoming Fraction Defective)

NUMBER OF PIECES INSPECTED	PLAN A		PLAN B		PLAN C	
	N 1000, n 30, c 0		N 1000, n 47, c 1		N 1000, n 100, c 4	
In Lots Which Were Accepted	55 x 30	1,650	73 x 47	3,431	95 x 100	9,500
In Lots Which Were Rejected (And Later 100% Inspected)	45 Lots	45,000	27 Lots	27,000	5 Lots	5,000
TOTAL NUMBER INSPECTED		46,650		30,431		14,500

will catch much of the bad quality material and eliminate it. The remaining defectives will be diluted among a larger number of acceptable pieces. Exhibit IV shows how the fraction defective might be reduced by the inspection and subsequent dilution process.

The average outgoing quality would vary as the fraction defective in the lots varied. Actually, if lots of very good quality or very poor quality were presented for inspection, the average outgoing quality would be better than if lots of average quality were presented. The question arises: "What would be the worst average quality one could expect from using the plan, no matter what level of quality were submitted?" This worst average quality that the plan would possibly allow is called the average outgoing quality limit. It can be computed easily for Sampling Plan A. This is done in Exhibit V, which shows the AOQL to be .0120.

#### Minimizing Total Inspection

There are presented in Exhibit II three plans which give the same stipulated quality assurance. They each have a lot tolerance defective of .08 and they each have a consumer's risk of .10. Which is the best plan? Assuming that the consumer (buyer) is going to 100% inspect all lots which are rejected by the sampling plan the best plan would be that one which minimizes total inspection.

Exhibit VI shows that for 100 lots, and in general, that Sampling Plan C is most economical.

*The Dodge and Romig Tables.* Tables are available which give the proper sample size to use for a

known lot size, process average or average quality level, lot tolerance defective, and consumer's risk. Dodge and Romig Tables are widely used (H. F. Dodge and H. G. Romig, *Sampling Inspection Tables*, Wiley, 1944). These tables are based on minimizing total inspection.

*The Army Service Forces Tables.* As one of the world's largest buyers, the armed services provide a splendid illustration of the use of sampling for acceptance. The Army Service Forces Tables differ somewhat from the Dodge and Romig Tables. They are based on the idea that lots which do not pass the acceptance sampling test will be returned to the producer. In order to reduce the producer's risk of receiving back good lots, producers with a good quality record have their material checked with a normal plan, as opposed to a stricter plan for producers having poor records.

A typical procedure might be as follows. First the acceptable quality level is established. Suppose it is .02 for rubber grommets. The grommets are divided into lots of (say) 1,200. The sampling plan might call for the inspector to inspect 150 and if he finds 6 or less defects to accept the lot.

#### Develop Your Own Tables

A company does not have to rely on published tables. Anyone who is fairly competent in statistics can derive tables from the use of the binomial expansion or the Poisson Distribution. Tables could thus be tailor-made for the particular company. One of the young men in the

company might have had sufficient college training in statistics to do the job.

The purchasing agent himself, if he has a flair for such things, might quickly pick up the ideas necessary with a little refresher in statistical probability. He might find himself delving with some interest and understanding into such subjects as randomness, how to choose a random sample, the laws of large numbers, the laws of small numbers, double sampling, and sequential sampling. A readable book for such a man might be *Statistical Quality Control*, by E. L. Grant (McGraw-Hill Book Co., 1946). However, it should be noted that while acceptance sampling is a blood brother to statistical quality control, acceptance sampling does not concern itself with the Average and Range Process Control Charts which have become so popular. Acceptance sampling is a distinct phase of the application of statistical probability to industry.

Acceptance sampling is a legitimate field for exploration by the purchasing executive. The N.A.P.A. survey shows that incoming inspection reports to materials departments (Receiving, Stores, and Purchasing) in 36% of the companies surveyed. (*N.A.P.A. Handbook*, p. 270). Other surveys continue to show the close relationship between incoming inspection and purchasing. This is logical to the purchasing executive who looks upon his function as that of providing the proper (quality) material at the proper place at the proper time in the proper quantity. Acceptance sampling will help him to do it more economically and effectively.

## Purchasing for Plant Maintenance

**M**AKING up a substantial part of the purchase list in every industrial purchasing program is the miscellany of non-product items coming under the familiar classification of "MRO"—maintenance, repair, and operating supplies.

The importance of these items, prosaic and "non-productive" though they may be, is pretty generally appreciated—not only because of their impressive dollar volume, but because smooth and continuous operation depends as much on a well ordered and well kept plant as on the flow of product materials.

There is perhaps even more reason for the purchasing agent to take a serious concern in maintenance items than in product materials because the controls over quantity and quality that are inherent in product components, thanks to specifications and manufacturing programs, are frequently lacking in respect to maintenance work. Furthermore, whereas costs of component items are under constant

close and careful scrutiny, quickly and directly reflected in the cost of product, the costs of maintenance are indirect and are frequently hidden in the cost of manufacturing or handling, throwing the latter out of balance though the discrepancy or its cause may be unsuspected.

It is scarcely necessary to point out that a dollar saved in maintenance is in every way the equivalent of a dollar saved in the cost of materials or production. The opportunities for saving through efficient and economical maintenance are less dramatic, but just as far reaching and perhaps more readily attainable than those in connection with product materials.

### **Preventive Maintenance**

Most purchasing of maintenance materials is predicated on specific upkeep and repairs to be done. The modern trend in plant practice, in which the purchasing agent can play an important part, is toward preventive maintenance rather than repair—a policy that detects, antici-

pates, and by proper care avoids possible mechanical or operational failures in plant facilities and equipment. Examples of preventive maintenance are: group replacement of electric light bulbs, a regularly scheduled lubrication program for all equipment, floor and roof treatments that prolong the useful life of these surfaces, systematic inspection of wiring and piping systems, and of machine and portable tool equipment. Many features of the plant safety program would also come logically within this category.

Preventive maintenance is an economical policy. The first advantage is obvious and suggested by the term itself. It avoids costly major repairs due to inadequate or deferred maintenance, and thus obviates the even more costly shutdowns or interruptions to production. Corollary to this, and helping to eliminate the "hidden" costs cited in the previous section, is the fact that good preventive maintenance practice keeps plant facilities and equipment at a high state of efficient performance, and is thus an important contributing factor to efficient as well as uninterrupted production.

Maintenance, like production, is a plant policy and program. Also, like production, it is implemented by purchasing of proper quality supplies scheduled to meet the need and procured as economically as possible. The purchasing agent who is eager to serve his company to greatest advantage, and who is interested in making his maintenance materials dollar go farthest, has a definite concern in promoting such a maintenance policy.

### **Procurement and Use**

By the same token, the purchasing agent is concerned not only with the procurement of materials required for maintenance, but in their proper use and application. Ultimate value received depends largely



on usage, and there is no phase of purchasing where this is more true than in respect to maintenance supplies, where the possibilities of waste are enormous.

The answer to this problem usually lies in close cooperation with maintenance and department foreman. It is less acute where a systematic maintenance schedule is in effect. As in the case of production items and operating supplies, the buyer can do a far more intelligent and effective job to the extent that he is personally familiar with maintenance requirements and practices in the plant.

The buyer's contact with suppliers of plant equipment, particularly in the procurement of the actual installations or facilities that are to be maintained, can be of great assistance. Most manufacturers have standard recommendations as to the care of their product for maximum efficiency and service life. These recommendations cover practical details such as the lubrication schedule and type of lubricant, types of cleaners to be used and to be avoided, check list of items to be noted in periodic inspection for trouble-free performance. Such recommendations should be welcomed and passed along to the plant men responsible for maintenance, as a valuable guide and supplement to general maintenance practices.

### **The Stockroom Story**

One of the most important aspects of purchasing for plant maintenance is standardization. Elsewhere in this issue is a detailed discussion of standardization of lubricants, demonstrating how the number of varieties in regular use can be held within reasonable limits while meeting every plant requirement satisfactorily, in contrast with a policy of purchasing and storing many different varieties for each individual application. The same principle applies with equal force to cleaning compounds, paints, brushes, and many other maintenance items.

Stockroom inventories of maintenance supplies are one of the big factors in this phase of purchasing. Any curtailment in the number of varieties required multiplies savings in the quantity as well as the variety carried in inventory, in the savings resulting from consolidated purchase orders, and in the paper work involved in ordering and record keeping. Standardization is one of the very effective ways of accomplishing this.

Another factor to watch is the possibility of procuring supplies in which one size or variety is designed to serve a wide range of applications. One manufacturer of V-beltting, for example, has so designed his product that three sizes carried in stock, cut and joined to the required length, will serve for all sizes. The net result is the simplification of inventory stocks, with fewer varieties needed and a lower carrying cost.

A general program of standardization throughout the plant, in respect to equipment, floor and wall treatments, electrical controls, and the like, makes possible the extension of standardization in the inventory of spare parts, repair equipment, and maintenance supplies. Oftentimes the complication of the maintenance problem starts with a lack of standardization in other phases of the company operation, calling for an unnecessary variety of maintenance activities and supplies.

### **Purchasing Program**

With the exception of major repairs and overhauls, maintenance items can be budgeted with a fair degree of accuracy. This is particularly true in the case of programmed preventive maintenance. In other cases, the applicable standards may be based on rates of production operations or similar measurable criteria. Where no other standards exist, past performance makes a practicable starting point.

Setting a standard, or budget, for maintenance accomplishes two purposes. It is the direct way of impressing foremen and others with the magnitude and significance of maintenance expenditures, and it provides a stimulus and measurement to encourage improved performance. The foreman or department head who is responsible for department expenses has a definite interest in this "hidden" element of cost that is chargeable to his operation, and he has a competitive interest in seeing that his performance compares favorably with that of other departments.

Putting the maintenance budget into terms of dollars and cents is an effective argument toward overcoming individual preferences or prejudices that are usually the biggest hurdle in a program of standardization. Those preferences for special items or brands lose a good deal of their force when a department that has insisted on them as a matter of principle finds that it is not sharing in the economies of the

standard program and is being charged for its rugged individualism in the distribution of costs.

The budgeted maintenance program is also a great advantage in a planned purchasing program on these items, based on normal monthly requirements.

### **Adequate Maintenance**

The emphasis on cost in the foregoing discussion should not be misconstrued as an argument for minimum maintenance. On the contrary, it is an argument for complete maintenance, administered efficiently and economically. As in the purchase of product materials, quality and the end result are the first consideration, with lowest ultimate cost for that result as the goal of procurement. The cost of a comprehensive program of preventive maintenance may represent a higher level of expenditure, month by month, than hit-or-miss maintenance and repair activities. The advantages of good maintenance, like the costs of poor or inefficient maintenance, are hidden, though the end result is clear. The higher costs and staggering impact of "deferred maintenance" are well known.

But there are advantages along the way, too. Some of these, like well sustained machine efficiency and freedom from breakdown in equipment and facilities, have already been cited. Others are less tangible, but none the less real.

Management generally recognizes the practical benefits of "good housekeeping" in plant operation. It has its effect in quality of output and productivity per man, quite beyond the mechanical considerations of machine capacity. It contributes to careful and safe operation. It is a big booster of worker morale and loyalty. In the period of labor shortages that is predicted for the coming months, it may well constitute the difference between costly labor turnover or the lack of an adequate working force and a steady, reliable force of satisfied workers.

Some of the characteristics of the plant with adequate maintenance policies are:

Good lighting, adapted to the type of work and at the right light level for working areas, with light sources and reflectors kept clean and bright.

Dependable power source, including power transmission to working equipment, delivering rated power to the equipment.

(Please turn to page 278)



# Fit Fire Protection to the Hazard

**T**HERE are several different types of fire extinguishing equipment. Most of them are effective under the conditions for which they are intended; they are not equally efficient for all types of fires.

The first rule, therefore, is to provide the type of extinguisher suited to the hazard in a given plant location.

The second rule is to have fire extinguishing equipment located conveniently near the point of maximum hazard—readily available, and clearly marked. Prompt action is important. Remember that the maximum horizontal range for carbon dioxide and dry chemical type extinguishers is about 8 feet; for foam, vaporizing liquid, and loaded stream extinguishers about 40 feet. Do not place extinguishers at locations that are likely to be cut off in case of a fire.

The third rule is to check extinguishers periodically to be sure that they are fully charged and ready to use. Manufacturer's instructions recommend details and schedule for inspection. Watch for leakage and clogged nozzles. Responsibility for inspection and maintenance should be definitely fixed, and records kept.

## CLASS A FIRES

Ordinary fires in combustible materials such as paper, wood, and rubbish. The quenching and cooling effects of large quantities of water are important in controlling such fires.

## CLASS B FIRES

Fires in highly flammable and rapidly burning materials on floors or in open vessels, e.g., chemicals, gasoline, oil and grease. The important factor in controlling such fires is a blanketing or smothering action which cuts off the supply of oxygen.

## CLASS C FIRES

Fires in electrical equipment. The smothering action is most important. Remember that though the flames may be under control, the fire is not "out" so long as the igniting source, electric current, is not shut off. Another consideration is that the extinguishing agent should be such as to cause the least damage to the apparatus.



## USE

Water pails, pump tanks and hose are effective.

Soda-acid, foam, or loaded stream extinguishers.

For small fires, and in the absence of strong air currents, vaporizing liquid, dry chemical, or carbon dioxide can be used.

## USE

Foam, dry chemical, loaded stream, vaporizing liquid, carbon dioxide.

Avoid using water, which tends to spread the fire and has little extinguishing effect.

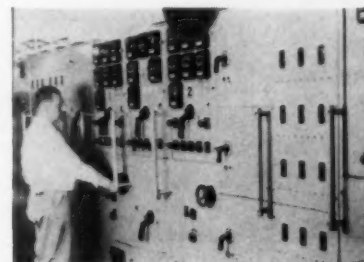
## USE

Dry chemical, vaporizing liquid, or carbon dioxide extinguishers.

On low voltages (under 600v) fog nozzles on water lines are effective.

Avoid liquid streams or hose lines unless you are sure the equipment is electrically dead. Electric charges can be conducted to the operator along such lines.

# Check List for Maintenance of Industrial Wiring



Check for adequate capacity of conductors and controls. See that temporary installations and extensions are promptly put on a permanent basis.

Check for exposed live spots, mechanical damage to conductors and insulation, abrasion by contact with guards or moving parts, dangers from location close to traffic aisles or in heavy work areas.

Check for loose or faulty connections, accumulations of dirt, exposure to excessive vibration.

Check proper ventilation of all devices, heating due to overloaded circuits or external heat sources.

Check for excessive voltage drops and faulty grounding.

Check for proper location of switches, circuit breakers, etc.

Check for presence of moisture, condensation, chemical fumes, lint, and other detrimental conditions.

# MRO Supplies Embrace Wide Range of Products

## TYPICAL PURCHASE LIST OF THE BUYER OF NON-PRODUCT ITEMS

Abrasive paper, cloth, belts	Hacksaw blades	Rawhide
Batteries	Hammers and mallets	Rivets
Bearings	Handles	Rock Salt
Bearing metals	Hangers	Rope
Bolts and nuts	Heater units	Rust preventives
Brushes, carbon	Hoists	Safety equipment
Brushes, cleaning	Hose, air	Saws
Brushes, paint	Hose, high pressure	Scales
Bulbs, electric	Hose, hydraulic	Screening
Bushings	Hose, oil resisting	Screws
	Hose, welding	Screwdrivers
Cans, waste	Jacks	Seals, oil
Cement		Shellac
Chisels	Ladders	Sheets, drip
Compound, boiler	Lamps	Shovels
Compounds, cleaning	Lanterns	Slings
Compound, valve grinding	Lath, rock	Snips
Cups and fittings, oil	Levels	Soap
	Lifters, valve	Sockets, tool
Dispensers, soap	Locks	Solder
Dollies	Lubricants	Soldering irons
	Lumber	Solvents
Electrical supplies	Mats, rubber	Spacers
Cable	Mops	Staples
Cell testers	Movers, car	Stamps
Channels		Steel
Condulets	Nails, common	Steel wool
Connectors	Nails, cement coated	Strainers
Fuses		Stretchers
Insulators	Oil, anti-rust	Tackers
Outlets	Oil, cutting	Tape, gummed
Receptacles	Oil, lubricating	Tape, masking
Rectifiers	Oil, machine	Tarpaulins
Starters	Oil, masking	Tissue, toilet
Sockets	Oil, motor	Tools, hand
Switches	Oil, neatsfoot	Tools, portable electric
Voltmeters	Oil, quenching	Towels, paper
Enamel	Oil, transformer	Treads, non-slip
	Oil, turbine	Trucks
Fasteners, belt	Packing	Twine
Fasteners, metal	Pails	
Files	Paint	Valves and fittings
Fire protection equipment	Pallets	Varnish
Fittings	Paper	Vises
Flux	Pipe and fittings	
	Pliers	Wax
Gaskets, asbestos, fiber,	Plugs	Welding points
metallic	Primers	Welding rod
Globes	Pulleys	Wipers
Gloves	Punches	Wire
Glue	Putty	Wire rope
Grease		Wheels
Guns, grease	Rasps	Wheelbarrows
Guns, spray	Ratchets	Wrenches

# A Guide to Proper Floor Cleaning . . .

## CONCRETE FLOORS

**Use:** Warm soapy water. Scrub and mop clean. Moderate alkaline cleaners or emulsifiable solvents where oil and grease are present. Allow to stand for several minutes; mop up, and rinse with hose.

**Avoid:** Strong alkalis, acids, gasoline, benzine.

## LINOLEUM FLOORS

**Use:** Mild soap and lukewarm water. Brush or mop lightly; rinse with clear, cold water. Hold washing to a minimum.

**Avoid:** Gritty scouring materials, strong soaps.

## MASTIC FLOORS

**Use:** Neutral soap with some solvent action.

**Avoid:** Strong alkalis.

## OILY AREAS

**Use:** Dry oil-absorbing materials, spread around machines and on oil-soaked areas, to "blot up" oil and grease. Sweep.

## TERRAZZO FLOORS

**Use:** Warm soapy water and mild solvent. Rinse thoroughly.

## WOOD BLOCK FLOORS

**Use:** Alkaline cleaning compound containing solvent



and a wetting agent to penetrate dirt deposits, emulsify grease and oil, and hold solid dirt in suspension.

## WOOD FLOORS, PAINTED

**Use:** Mild solvent-soap type cleaner. Rinse and mop dry.

**Avoid:** Alkalis that would attack the finish.

## WOOD FLOORS, UNPAINTED

**Use:** Mild alkaline cleaning solution. Mop dry.

**Avoid:** Heavy alkaline action, that can damage the wood structure.

Soapy solutions, that tend to leave a slippery film.

Wetness. Rinse and mop dry to permit the wood to dry as rapidly as possible.

## FLOOR CLEANING MACHINES

A variety of floor cleaning machines are available for the care and cleaning of large floor areas. These include:

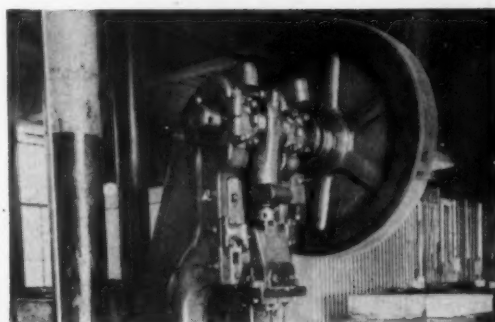
Sweepers	Brushes	Scrubbers
Magnetic Sweepers	Polishers	Sanders
Burnishers	Vacuum Cleaners	

As a general rule, compounds used for machine cleaning may be in less concentrated solutions than those used in manual cleaning operations.

Whether hand or machine cleaning is used, excessive brushing and scrubbing should be avoided. Let the cleaner do the work, and rinse thoroughly to remove both the dirt and the cleaner.

# A Check List for Maintenance of Leather Belts . . . . .

- Check alignment of shafts.
- Check alignment of pulleys.
- Check belt tension.
- Check belt surface for cleanliness.
- Renew belt dressing every 3 to 6 months.
- Check for worn fasteners or lacings, and replace.
- Check for separation of plies and opening of cemented laps.
- Check for worn pulleys. Recrown or replace.
- Check for rubbing against machine guards or other obstructions. Correct.





## Purchasing Lubricants on Buyer's Specification

By **T. O. English** Assistant General Purchasing Agent, Aluminum Company of America, Pittsburgh



Proper lubrication is the key to precision machining operations and economical maintenance.

**W**HENEVER a consumer attempts to rely on suppliers to handle all of his lubrication affairs, there are a number of interesting developments.

Frequently, the consumer receives a variety of conflicting recommendations. These discrepancies may include a variation in the number of lubricant items required, the viscosity grades recommended, the basic types of lubricants needed for a particular application, the method of applying the lubricant, the frequency of drain and refill periods, and main-

tenance methods. Many of these discrepancies are so basic that the consumer cannot help but recognize them. If one of the recommendations is correct, all others are obviously incorrect.

There is also apt to be a wide variation in the initial costs of the oils recommended. When this variation exists, the consumer may have an honest doubt concerning the extent to which his best interests are being balanced against the most profitable items in the oil supplier's line.

The supplier who objects to specification buying seems to go on the assumption that he alone is in the position of having all the information necessary for the selection and use of lubricants. This assumption is open to serious question inasmuch as a great deal of the oil suppliers' practical knowledge can be obtained only through field experience gained with consumers' cooperation. This contention also overlooks the fact that many consumers make it a practice to secure the advice of the supplier. Progressive consumers always discuss their specifications with oil vendors for the purpose of exchanging information and resolving any points of disagreement; furthermore, the best informed consumers make their specification limits as broad as possible.

The point should be emphasized that the operating characteristics of a lubricant cannot be determined from the physical and chemical properties alone; other factors associated with its ultimate use are equally important in determining performance characteristics. However, our own experience of more than ten years strongly indicates that it will be increasingly possible to identify, measure, and specify the characteristics that a lubricant must have to withstand certain operating conditions. The Federal Government, and some of the nation's larger industries, have used the specification system effectively and advantageously for many years. Two specific examples in the industrial field are the Ford Motor Company and the Eastman Kodak Company, who have purchased lubricants according to specifications for more than 30 years and 18 years respectively. Lubri-

## THREE METHODS COMMONLY USED IN PURCHASING INDUSTRIAL LUBRICANTS

A

### MANUFACTURER'S RECOMMENDATION

Machinery manufacturers often recommend one or more brand name lubricants for use on the various parts of their equipment. The assumption that prompts purchase of lubricants on this basis is that equipment which is lubricated as recommended may be expected to give most satisfactory service.

Method "A" encourages small quantity buying. Many brand named items, however, are equivalent in properties although this fact is not apparent to the buyer. A large buyer may purchase the same ten lubricant items from ten different suppliers when he could have made the entire purchase from one. Thus he is prevented from realizing the savings of quantity buying and reducing the number of orders issued and items carried in stores.

B

### SUPPLIER'S RECOMMENDATION

The user may ask a reputable supplier to handle his lubrication problems for him. The supplier surveys the equipment, recommends the brand named products that should be purchased and instructs operating personnel in how to apply them. He makes periodic checks on the quality of oils in service and advises as to when oils in circulating systems, etc., should be replaced. The buyer's duty is merely to place orders for the specific quantities needed. Reputable suppliers are qualified to furnish this kind of service. For many concerns, which cannot economically justify an independent purchasing procedure, the method is entirely feasible. It reduces the number of items purchased as compared with Method "A".

C

### PURCHASING ON SPECIFICATION

The user can determine his own requirements of properties in lubricants, define them in a specification, and make his purchases in the open competitive market, assuming the responsibility for proper selection as in the case of other purchased items.

It is only within the last decade or so that consumers have become aware of the important role of lubrication in many mechanical and process operations, and have recognized that the method of selecting lubricants is also important.

With the trend toward emphasizing lubrication, specification buying of lubricants has become an increasingly controversial subject. This article presents the case for purchasing on specifications.

cant suppliers themselves purchase many of their basic materials on the basis of specifications.

#### Effect on Inventories

The large consumer who purchases by brand name, in keeping with the recommendations of vendor lubrication engineers, soon finds his inventories increasing at an alarming rate—both in the number of separate items and in quantities of each item stocked. This entails added confusion in record-keeping, purchasing, storage, and maintenance service records.

In our own company, for example, we found ourselves buying, stocking, and attempting to apply nearly one thousand separate and distinct brand named products. When we have completed our standardization program, we fully expect to have not more than 50 to 75 lubricant items, and we shall be purchasing a major percentage of these under our own specifications.

#### Prejudices—Pro and Con

There is another very serious objection to purchases by brand name—as great a disadvantage for the supplier as for the consumer. The use of brand name lubricants tends to establish strong prejudices among operating personnel, for one product or another. These are very disconcerting when improvements in certain lubricants make a change desirable. Strong psychological prejudices for or against any product

hamper progress and are unfair to everybody concerned.

As any one associated with industrial processes knows, troubles can and do occur in most operating devices and equipment. These may be traceable to mechanical failure, off grade material, or a variety of other difficulties. The natural tendency is to blame the troubles upon the factor that is least understood. All too frequently, the only fact known about a lubricant is its name. Thus it is very convenient for those involved to state, and really believe, that the lubricant has caused the trouble because of a change in its characteristics or composition.

Such suspicions are not entirely unfounded. It is a matter of record that the characteristics of brand name products are subject to change at any time. Often these changes are made without any advance notice to the user, the person who is most concerned. No doubt the supplier makes these changes in good faith, to improve his product for its most important applications. Nevertheless, there are many proper applications for the product that would be seriously affected by an unannounced change in properties. Lubricant items that are selected and used because of known and identifiable properties cannot be conveni-

Storage and handling of lubricants can become a major problem when many varieties are in use.



ently blamed for troubles that they did not cause.

Oil suppliers complain that their products are frequently misused. This is a logical result of the purchase and use of lubricants on the basis of brand name alone. With the consumer in the dark as to the physical and chemical properties of his lubricants, it is no wonder that the product is often used improperly.

### **Do Specifications Retard Progress?**

The objection is raised that specification buying retards technological progress by placing a premium on minimum properties. As a matter of record, this is not the case. Many outstanding developments in the field of lubricants have been a direct result of specification buying. One example is the development of modern, heavy duty, detergent type oils. Much of the impetus for this development can be directly traced to the action of the Caterpillar tractor Company in establishing specifications for the performance of crankcase oil to be used in their engines.

The objection also ignores the strong effect of competition. The competitive incentive would not permit a group of suppliers to provide lubricants at their minimum specifications for any long period of time. Enterprising suppliers might see their opportunity to gain a selling advantage for their product by exceeding minimum specifications. This improved product then presents a challenge to the consumer to improve his specifications, and the cycle begins again.

The writing of specifications is in itself a means of progress. Problems will often be crystallized and defined that might not otherwise receive attention. The very fact that an initial specification is poor will provide the incentive for improved specifications.

A knowledge both of lubricants

and of the equipment to be lubricated, and familiarity with the lubricant products that are on the market, are essential to the preparation of sound specifications. The buyer who does not understand the properties of lubricants will not be able to determine the characteristics that are required for his various operations. A summary of the important physical and chemical properties may prove helpful.

The physical variables most generally used in analyzing lubricants are: viscosity, cloud and pour point, color, specific gravity, flash and fire, volatility, plus a number of secondary variables.

Viscosity is the most important single factor. If the viscosity value of a lubricant is known for at least two temperatures, the viscosity index can be readily computed. This index is important because it indicates how the viscosity of an oil will vary at different operating temperatures. Where movement is slow, viscosity is not as critical a factor as in the lubrication of rapidly moving bodies.

### **Physical Variables**

Cloud and pour point value is significant only where congealing is undesirable. In most cases, these values are well below the air temperatures normally encountered in a plant.

Color of new oil has little to do with its lubricating value. Variations of color during use, however, are quite significant, often giving the first indication of excessive oxidation or contamination of the oil.

The specific gravity of an oil may be used, with other information such as the viscosity index, to indicate the type of crude oil from which the lubricant has been refined. This fact is sometimes important in identifying the viscosity characteristics and chemical stability of an oil.

Flash and fire points can be very misleading if used as a basis for de-

termining safety factors. The present trend is to place much more emphasis upon auto-ignition temperatures, explosive limits in air, and other direct inflammability tests closely related to operating conditions. Flash point now seems more useful as an indication of volatility and the presence of low boiling fractions or contaminants.

Volatility is important in operations where the lubricant must be used at high temperatures, or where it is not enclosed, as in the rolling of metals. Under such conditions, the oil should be as nearly non-volatile as possible.

### **Chemical Properties**

With reference to chemical properties, lubricants may be classified in several general groups:

- a. Straight mineral oils containing no added components.
- b. Mineral oils containing oiliness and anti-wear agents.
- c. Mineral oils containing chemically active extreme pressure agents.
- d. Mineral oils containing both oiliness and extreme pressure addition agents.
- e. Mineral oils containing oxidation inhibitors.
- f. Mineral oils containing rust inhibitors.
- g. Miscellaneous oils containing various combinations of the foregoing.
- h. Synthetic lubricants.

Among the more important chemical considerations is the stability of the oil. This term refers to the ability of the oil to retain its original characteristics in the presence of high temperatures, moisture contamination, and contact with various metals. The best oils will resist high temperatures and catalytic influence for much longer periods of time than will the more unstable oils.

Oiliness and extreme pressure agents, incorporated into a lubricant, decrease wear, minimize frictional power losses, and increase the unit loads which can be designed into machine elements.

Rust inhibitors, added to oils, guard against corrosion of the metals they contact. They are particularly designed for use in hydraulic fluids, bearing lubricants, and other oils used in circulating systems.

Several well recognized test procedures exist for checking the properties of additives, as well as for establishing the stability and efficiency of a lubricant. With qualified technical supervision and a minimum of apparatus, the consumer can



Specified requirements and competition have been important factors in the development of better lubricants.





Laboratory bench tests do not tell the whole story, but they provide useful basic information.

use these tests to measure the characteristics of the lubricants he is using. They are sufficiently reliable that he may use them to evaluate and check the quality of his purchases. The interpretation of the test data, though somewhat controversial, can be achieved successfully if the task is approached with a patient and open mind.

With reference to greases, a somewhat similar situation obtains. The most important point in evaluating a grease is to determine how long it will maintain its original characteristics under anticipated operating conditions. One prime consideration is the effect of various rubbing speeds and unit loads on its chemical stability. The present trend is to emphasize the use of simulated performance tests for screening lubricant products rather than to rely on chemical composition. Such performance tests include the wheel bearing test, high temperature ball and roller bearing test units, water solubility, penetration, dropping, and bleeding tests, and the Norma Hoffman oxidation stability tests. The proper combination of these tests permits a much better evaluation of a grease, as to its suitability for any intended use, than would be otherwise possible.

The goal of purchasing practice should be to achieve a balance between the use of laboratory and plant performance tests which have been well planned and supervised. Each type of testing has its advantages; therefore the best procedure is to utilize both types as effectively as possible. Our own company's

experience in this regard has been most reassuring.

#### **A Specification Program**

With a knowledge of equipment requirements and of lubricant properties, the buyer should be able to state his lubricant requirements in written form. This statement will be a "specifications". It will define the *minimum* requirements of a lubricant that will satisfy the *maximum* requirements of the equipment on which it is to be used.

Such specifications will describe clearly the lubricants that suppliers are expected to provide. The fact that all suppliers are placed on an even basis will stimulate competition. It will also encourage developmental work by indicating a specific goal that must be reached. It should enable the buyer to obtain maximum dollar value in a lubricant.

It is admitted that this method requires more know-how, more manpower, and more energy on the part of the buyer than buying on the suppliers' recommendations. This could be a serious disadvantage in a very small company, but for a company which employs the services of a mechanical engineer and a chemical laboratory for other purposes, the additional responsibility can be handled without too much effort.

The first step is to make a listing of all lubricants presently in use and their costs, including cost of storage and handling. The labor involved in lubricating the equipment should also be recorded. This list will probably be surprising in the number of items shown.

The buyer should then classify his lubricants according to their physical and chemical properties. As they fall into various type groups, viscosity ranges, etc., duplications can be located and eliminated.

Next in order is a study of all applications to determine the lubricant best suited for each purpose. When the proper lubricant has been established for each application, it should be compared with what is now being used. Any changes that are necessary may be made at this time.

Evaluation of dollar purchases against maintenance and operating costs is another important part of these preliminary investigations. There may be a feeling that because purchases of lubricants are relatively small, a survey program is not necessary. In many cases, however, a low dollar volume of purchases may be causing higher plant costs through improper lubrication practices. A proper study will, in many cases, result in lowering maintenance and operating costs.

With the information in hand, research and technical personnel should make general recommendations for each application. Specifications should be written by the technical section and reviewed in the purchasing department to determine whether they are "workable" from a purchasing standpoint.

At this stage, classifications of brand names will reach the point where reference to the various groups of lubricants will be an advantage in purchasing. As the specification is written for each requirement, the products in this category are removed from brand name buying and placed in the specification buying program. Users who do not have the facilities necessary for purchasing lubricants by specification can adopt a classified brand name type of purchasing. Such a plan will make attractive savings possible and serve to eliminate the purchase of duplicate items.

Among the advantages of specification buying is the fact that it usually serves to develop more sources of supply. With brand names of secondary importance, the user has a wider choice of suppliers. The criterion of quality is no longer the company name but the composition and properties of the product. But the real advantage of this procedure can be summed up very briefly: The consumer who knows what lubricants to buy, and why he is buying them, makes more intelligent purchases.

# Techniques of Purchasing

By John G. Jones

Vice President, Manufacturing Division, Barrington Associates, Inc., New York

This is an abstract of a paper presented in a seminar course on "How to Buy Equipment", conducted by the Purchasing Agents Association of New York in cooperation with the Association of Consulting Management Engineers.

**T**ECHNIQUES are tools, a means to an end. They are not an end in themselves. The good purchasing agent knows and uses all of the most modern tools of his field and tempers their use with the application of good judgment.

Ultimate cost determines the adequacy of the purchasing job. The variations in techniques used are principally concerned with ultimate costs. Preoccupation with price inhibits the performance of a good purchasing job and the attainment

of lowest ultimate cost. While price is a factor, and an important one, it is not the final answer. Quality, delivery, terms, amount of investment, and other factors, are all important in the determination of ultimate cost.

## PRINCIPLES OF PROCEDURE • • • • •

**A**DEQUATE records are important tools to any good businessman. The clerical procedures used in purchasing are worthy of careful consideration and study on three basic points:

1. Cumbersome and antiquated

systems are inherently wasteful of clerical and managerial time.

2. A system that does not provide facilities for policing of prices and conditions on both open market and contract purchases may lead to costly errors and failure to use the

most economical sources of supply.

3. Procedures must be designed to fit the nature of the enterprise in which they are used. No one system is universally satisfactory. Analyze the problem before adopting a system.

## CONSIDERATIONS IN CONTRACT PURCHASES • • • • •

**T**HE contract technique is generally used where some sort of protection is sought. This protection may involve price, shortages, deliveries, or other factors. To secure such protection, the purchasing agent assumes certain obligations, essential if the contract is to be legally binding.

The contract may be subject to almost infinite variation. It may be on a time basis, with or without specified total quantity. Contracts for specified quantity involve speci-

cation of delivery—single delivery or spaced shipments. Billing may be arranged to cover the complete contract, on a single-shipment basis, or a deferred time basis.

Contract purchases have advantages for both the buyer and the seller. These factors are not simultaneously advantageous to both. When we say that an advantage to the buyer lies in the protection given against price increases, we automatically disclose a disadvantage to the seller.

Advantages of the contract technique in purchasing are that it (1) gives price protection, delivery protection and the concomitant protection against shortages; (2) allows the seller to maintain better control of his production; (3) allows local purchase against a national contract; (4) provides better control of the buyer's production through an even flow of materials; (5) allows for the economical use of capital since it permits intermittent delivery with full benefits of quantity discount.

## OPEN MARKET PURCHASES • • • • •

**O**PEN market purchasing is advantageous where purchased items are standard and readily available, where market conditions are variable, and where small quantities are involved. The principal disadvantage lies in the costs of keeping records, which are naturally more

comprehensive and voluminous than those required in connection with contract purchases.

The use of formal competitive bidding is usually limited to purchases involving substantial expenditures. The technique of the formal bid has one advantage that should recom-

mend its general use, whether formal bids may or may not be invited. This is the necessity of establishing specifications for the bid, defining what is really wanted and giving assurance of comparable quality in purchased products regardless of which seller is selected.

## PURCHASE VS. RENTAL OR LEASE • • • • •

**A**N important decision in procurement is whether to purchase equipment outright or to lease. Available on a lease basis are such facilities as ships, barges, trucks, contractors' equipment, business machines, and railroad cars, as well as buildings.

In some cases there is no choice. Where choice exists, the prime consideration is providing equipment at lowest ultimate cost. Conditions that favor the lease technique in procurement are:

1. Seasonal use of equipment.
2. Equipment required for one-time or short-term jobs.
3. Substantial outlay of working capital.
4. Obsolescence of equipment.

5. Uncertainties regarding the applicability of equipment.

6. Where problems of repair and improvements are shifted to the lessor.

7. Contract negotiations that are facilitated by the acceptance of rental charges as a part of manufacturing costs.

8. Where problems of disposal of surplus or obsolete equipment are significant.

Conditions that favor the technique of outright purchase are:

1. Long-term use of standard equipment of stable design.
2. Availability of capital at a rate which is lower than the rental charge.

3. Demands on the part of the lessor for right of access to the machines, resulting in access to secret processes or technological superiorities of the lessee.

4. The necessity to purchase parts, auxiliary equipment or supplies from the lessor, which may dilute the economies of the lease arrangement.

5. Competition induced by permitting small competitors to enter the field without any substantial capital outlay.

6. Excess capacity that may be induced to the imminent danger of any possibility of a stable product price structure.

## POLICIES ON SELECTION OF VENDORS • • • • •

**P**OLICY decisions regarding the matter of supply sources call for an answer to two questions:

1. To what extent shall local sellers be subsidized by paying a premium to such sellers?
2. To what extent is it necessary to maintain two or more sources of supply?

In connection with the former question, it should be recognized that the premium paid to the local supplier is not necessarily a gross loss when consideration is given to the matter of convenience, prompt service in emergencies, low delivery cost, and reduced inventories. This subject is usually more pertinent in the

small town than in a metropolitan area.

On the latter question, the formulation of any general answer is difficult, but on materials and supplies that are strategically important to the perpetuation of a business operation, a multiple source of supply is imperative.

## LEGAL CONSIDERATIONS • • • • •

**T**HE inherent contractual relationship between buyer and seller is a legal one. Purchase orders are legal documents. Government regulations relating to fair competition and labor relations have a direct effect on purchasing techniques and practices.

It is not enough to be familiar with the law as it is written; it is necessary to be familiar with current interpretations of the courts. With all of the demands on the purchasing agent's time, the availability of time to keep abreast of the flood of pertinent decisions is questionable. With this in mind, one summary recommendation can be made—if

there is any doubt on any problem that is of sufficient economic significance, consult a good lawyer.

To avoid the necessity for unwarranted expenditures for legal services, there are a few fundamentals of law with which the purchasing agent should be familiar:

1. The law of contracts.
2. The law of agency.
3. The law of patents.
4. The law of warranty.
5. The law of title, including f.o.b. point and the liability for sales and use taxes.

The intelligent use of legal services is counseled when the following

situations are involved:

1. Purchase of patented products.
2. The negotiation of important contracts.
3. Assumed breach of warranty.
4. Validity of warranties proffered by the seller.
5. Assumed cases of fraud.
6. Title search in connection with real property.
7. General questions of title to equipment and materials.
8. Protection against workmen's liens when such workmen are employees of an outside contractor.
9. Validity of releases from responsibility for damage claims.

## IMPORTANCE OF VENDOR RELATIONS • • • • •

**T**HE question of purchasing techniques is a significant and important one. We live in a world of change. Constant improvement results from an effort to keep informed on improved techniques.

Yet techniques are not the whole answer. A good bargain has been defined as a transaction that results in satisfaction to both the buyer and the seller. Some purchasing agents get a reputation for driving a hard

bargain. In times of shortages, when suppliers no longer find it necessary to depend on them as an outlet for their product, these men encounter real difficulties. The companies with whom a supplier has had satisfactory relations are favored.

One final technique should be mentioned. That is the technique of interviewing salesmen. With proper treatment, the salesman is a veritable mine of information. This is particu-

larly true of the sales engineer on technical equipment or materials. Proper application of the technique of interviewing affords the buyer an opportunity to expand the scope of his knowledge and thereby permits him to do a better job of purchasing. At the same time, the value of good reception and interviews, from the standpoint of public and business relations, while less tangible, is incalculably great.



Only the time-table is lacking, and that will be fast

## Control Pattern is Based on CMP



NPA Administrator W. H. Harrison—from phone repair man to president of IT&T—experienced in OPM and WPB—wartime chief of Procurement and Distribution Service, Army Signal Corps, with rank of Major General.

By A. N. Weckslar

**A**S shortages of materials create the necessity for controls, the techniques and restrictions on industry which were resorted to during World War II are progressively being brought into effect.

All that is lacking is an exact time-table. The need for restrictions has been accepted as fact. The method of control is fairly well established. The timing, however, is still variable. The factors determining the time element are a combination of (1) what actually develops on the far-flung battle lines which we hold and (2) the awareness by Congress of the need for accelerated expansion of our military power.

The general assumption is that Congress will appropriate the huge military budgets required to build up both the strategic and tactical units of the Air Force to significant battle strength, to reactivate most of the "mothball fleet" of the Navy,

and enlarge the number of Army divisions to make our infantry the "Queen of Battles", as it has been referred to traditionally.

To accomplish these objectives in a relatively short space of time will mean that much of the iron, non-ferrous metals, and basic chemicals which have been going into the greatest of all peacetime surges of civilian production, will be diverted into military production.

### Controls Patterned on CMP

If this changeover is to be effected rapidly, it will require an acceleration of the World War II control system, telescoping into a period of six months the former long-drawn-out process of transition from loose priorities to specific allocations.

In World War II, it was not until April 1, 1943—almost one and a half years after Pearl Harbor—that

the Controlled Materials Plan became even partially effective. Currently, however, it has been announced by policy making officials in the National Production Authority that, based on a continuing heavy armaments program, CMP will become effective in the third quarter of this year. The controls system which is anticipated does not greatly differ from the CMP of World War II.

Again, the concept of controls is that by completely controlling steel, aluminum, and copper, other basic points of control would fall into line. Actually there were some distentions in the economy, but by adjustments in the CMP controls—such as scheduling of components and some auxiliary control measures—CMP was a fairly effective medium of harnessing materials, production, and manpower to the changing requirements of a war economy.

### How the Pattern Developed

CMP represented the last of four control systems. The first of these was control by priorities. This system broke down as military and essential civilian requirements which had been assigned priority ratings required so much of available materials that the ratings deteriorated into hunting licenses.

To firm up the crumbling system of priorities, WPB instituted a system of control by "Unrelated Allocation" of short items—the so-called rifle approach—designed to guarantee delivery of materials to specific consumers when an important defense program lagged due to materials shortage.

Third system of controls was the

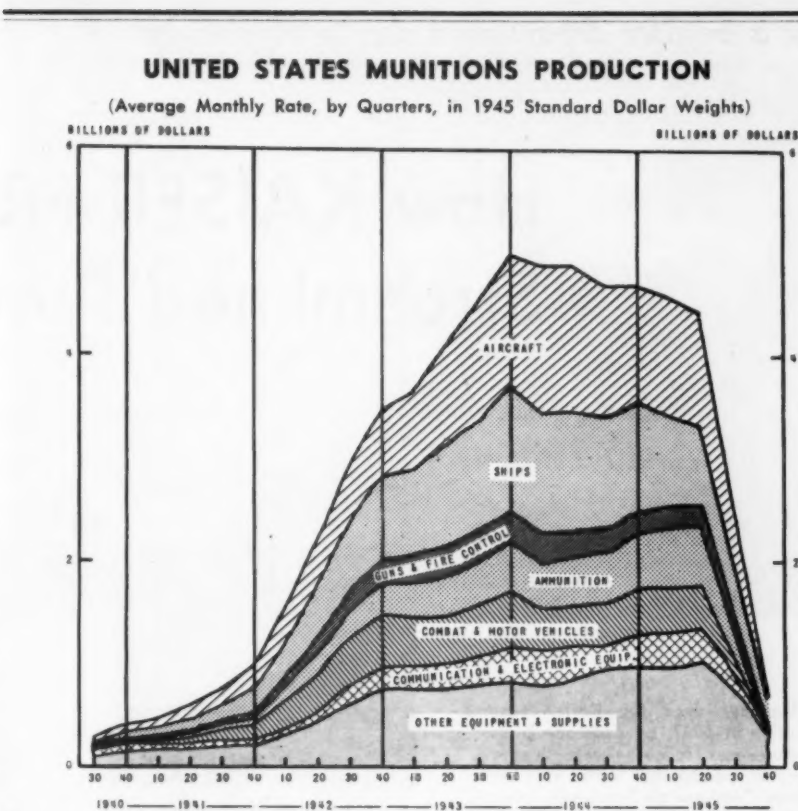
Production Requirements Plan—PRP—which was a system of integrated allocations of materials, administered by the Requirements Committee working through the various divisions of WPB. This system was inadequate because there was no identification between the allocated materials and the actual contract for which the materials were intended.

This insufficiency led to the development of CMP, which was a control system of integrated allocation, with the Requirements Committee working primarily through the procurement agencies—Army, Navy, Air Forces, Maritime Commission, etc.

The World War II controls took several different channels. Among these were the orders reserving total available supplies of specific materials for the military. This type of order has already been issued by the NPA. There were orders curtailing non-military use of materials to a specific percentage of a base period of use. Similar action has already been taken in the current control machinery. There were extensive limitations of civilian production, cutting back output of civilian goods to a fixed percentage of a base period, or completely prohibiting certain civilian activities. A limited approach toward this technique has now also been taken.

### Non-Military Projects

While it is true that the current basic scarcities are due to military purchasing and stockpiling, a considerable segment of the so-called essential Government program does not reflect conditions of war emer-



Source: Civilian Production Administration (formerly War Production Board).

This is the stupendous record of American war production, 1940-1945. The curve is once more headed upward.

gency, but rather is based largely on the decision to expand productive power.

Example is the expansion of the railroad system through a Government sponsored freight car building program, which comes at a time when, according to spokesmen for the railroad industry, our transportation facilities are much better than they were during World War II.

Similarly the petroleum industry expansion program is based on a combination of the greater requirements for military mobilization, plus the expectation of sustaining and encouraging increased civilian use.

Also the Government program of public works of a "pork barrel" nature goes on relatively unabated, and reclamation projects with little or no

(Please turn to page 274)

### TOP PERSONNEL IN NATIONAL PRODUCTION AUTHORITY



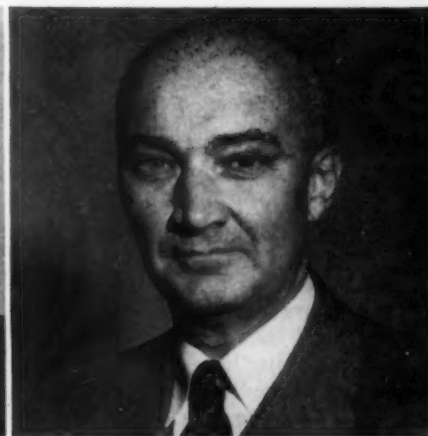
**MANLY FLEISCHMANN**

General Counsel  
Formerly assistant general counsel to WPB. Now shaping up policy on NPA control regulations.



**H. B. MCCOY**

Asst. Administrator  
for Industry Operations  
Career man (Commerce) since 1920.  
Will administer limitation, conservation and allocations orders.



**GLEN IRELAND**

Assistant to Administrator  
On leave from his post as Vice President and General Manager of Pacific Telephone and Telegraph Company.

## How KAISER-FRAZER Streamlined Purchasing

By Dwight G. Baird

L. S. Mackay joined the Kaiser-Frazer organization in 1947, as Assistant Director of Purchases, following extensive experience in purchasing work with the Blaw Knox Company of Pittsburgh, where he headed procurement activities for the Chemical Plants Division (1941-1943) and for the Martins Ferry (Ohio) Division (1943-1946). He was appointed Director of Purchases at K-F in January, 1949. Mr. MacKay is a mechanical engineer by training, having studied at Carnegie Institute of Technology.

**K**AISER-FRAZER, alone among the big companies, started big. Whereas, almost without exception, America's large businesses have grown from small beginnings, K-F started out in 1945 king-sized.

It acquired the largest plant of its kind in the world, completely converted it in nine months from bomber production to auto making, and in its first full production year produced the astounding total of 144,000 new-from-the-ground-up automobiles.

Understandably, therefore, there has been in the intervening years a steady change and realignment in personnel within the organization of this husky youngster in the auto world. Obviously, no company could be inaugurated on this scale perfectly or permanently staffed in all departments. Inevitably there was some overstaffing here, understaffing there; subsequently some departments had to be trimmed, others built up.

One of the largest management departments in those days was purchasing, actually more than twice its present size. That this department is numerically so much smaller to-



day may be attributed to experience, changing conditions and an effective program of streamlining.

It should be recalled that in 1946 purchasing was a frustrating business, particularly for a new company without historical buying priorities or preferences. With tools and materials unobtainable, K-F purchasing did the impossible and obtained them. This required extraordinary measures—multiple transactions to obtain a single item, a large staff and many man hours.

Happily, the critical supply situation gradually eased, and as it did so the purchasing department was able to take inventory and gradually work itself down to its best fighting weight.

L. S. (Mac) MacKay, who became K-F's purchasing director in January, 1949, believes the levelling off process has now been completed. With a staff of 76, including 14 men in the supervisory capacity, he has effected a streamlined department which in 1950 has handled the heaviest buying load in the company's history. Not only was the dollar volume higher, they were buying parts and materials for manufacture of 21 different models as Kaiser-Frazer for the first time invaded every major market. Previously, it will be recalled, K-F produced only Kaiser and Frazer four-door sedans, both having the same wheel base and being similar in many other respects.

Having come up from the ranks



Purchasing at Kaiser-Frazer is a matter of close teamwork. Shown in this conference photograph are (l. to r.) Clark Chrisco, Iron and Steel Purchasing Agent; Leigh Brown, Production Parts Purchasing Agent; Earl Payton, Non-Production Purchasing Agent; L. S. MacKay, Director of Purchases; Jack Arnold, Office Manager; and Ray Grow, Procurement Analyst.

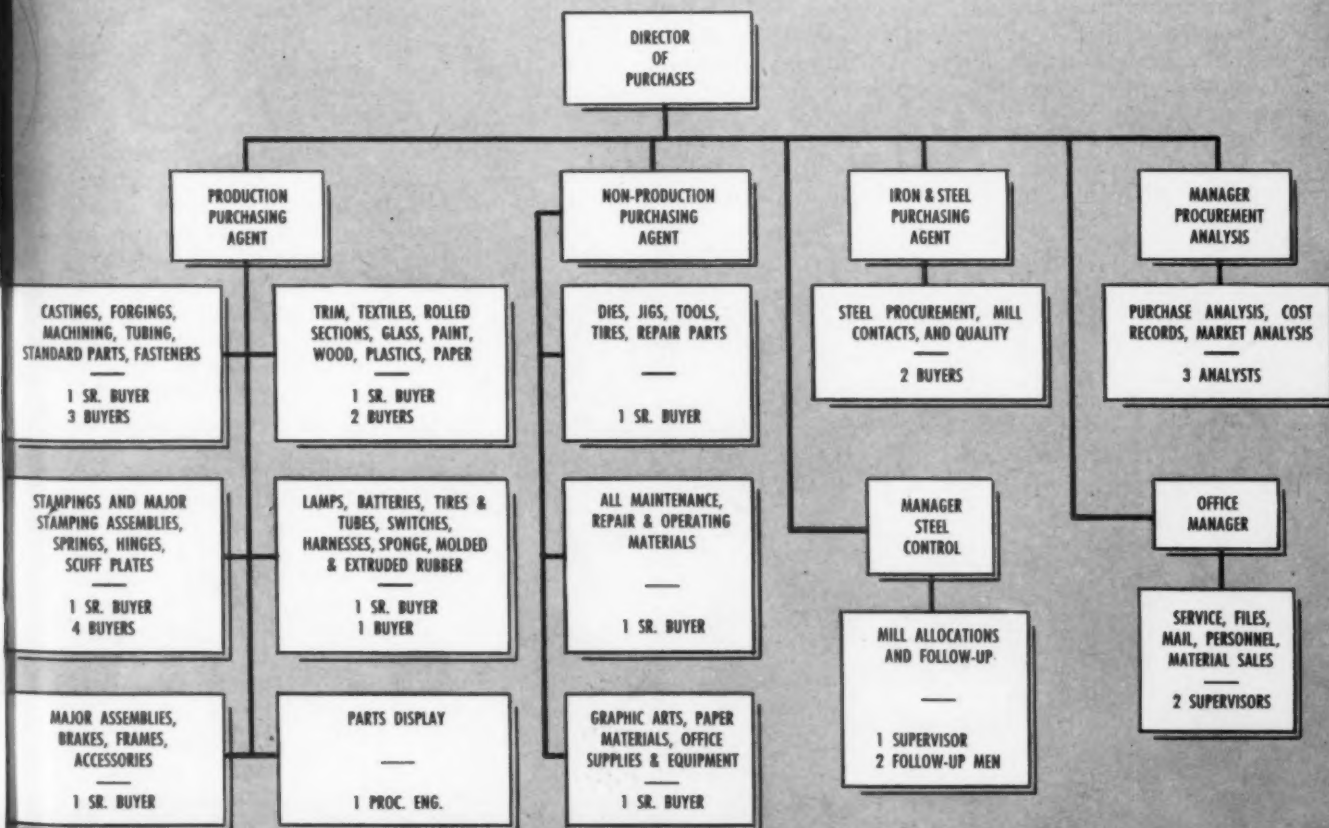


and fully aware of the change in the materials picture, MacKay set about at once to streamline the department in line with current requirements. His first move was to call a meeting of department heads to get their opinions on ways and means of adjusting operating procedures to present needs. It was agreed among them that purchasing was being burdened with several functions which now could be eliminated entirely, or properly transferred to other depart-

ments. With management cooperating, progress in that direction was quick and gratifying.

Next MacKay attacked the amount of emphasis that was being directed to expediting in the non-

production departments. He noted that buyers were still devoting much time to expediting deliveries, partly as a matter of habit, long after the need for such activity had been resolved. The new purchasing chief





November 18, 1949

## REVISED DISTRIBUTION LIST

CODE	2	3	4	6	7	8	9	10	11	Issued by
	CR. DO. Mfg.	Non-Prod.	Tooling	Steel	Prod.	Parts-Acc.	Sales	Export	K-F Canada	D.E.D.
1	Vendor	Vendor	Vendor	Vendor	Vendor	Vendor	Vendor	Vendor	K-F G	Vendor
2									K-F G	
3	Accounts Payable	Accounts Payable	Accounts Payable	Accounts Payable	Accounts Payable	Accounts Payable	N. Files	N. Files	K-F G	Accounts Payable
4				Steel Control	A. Sads*		Accounts Payable	Accounts Payable	K-F G	Prod. Planning
5	Receiving	Receiving		Receiving	Receiving	Parts & Accessories			Parts Pricing	
6	N. Files	N. Files	N. Files	N. Files	N. Files	N. Files	Receiving	Receiving	N. Files	N. Files
7	A. Files	A. Files	A. Files	A. Files	R. G. Dow**	A. Files			A. Files	A. Files
8	Cost	Cost	Cost			Parts Pricing	A. Files	A. Files		
9			Bellville		MacDonald		FRASP	Requestor	Long Beach	Ditto to D.E.D.
10	Central Stores	Requestor	MacDonald	Traffic	Woods or Weaver				Traffic	
11					Central Estimating					
A	Central Estimating									(Tooling)
B			Parts & Accessories							
D	Shipping	Shipping			Shipping					
E	Plant Eng.	Plant Eng.								
F	Auditing	Auditing	Auditing		Auditing					

Before the reorganization of the purchasing system, 32 copies of the purchase order were required, distributed as follows:

1. Vendor
2. Acknowledgement
3. Purchasing (numerical)
4. Accounts Payable
5. Receiving
6. Production Planning
7. Purchasing (alphabetical)
8. Cost
9. Buyer
10. Duplicate Acknowledgement
11. Director of Purchases
12. Asst. Director of Purchases
13. Purchasing (reports)
14. Central Estimating
15. Contract Division
16. Parts Corporation
17. Traffic
18. Production Planning
19. Purchasing (Follow-Up)
20. Planning (Claims)
21. Packaging Engineer
22. Engineering (ECR Control)
23. Master Mechanic (Body Engineering)
24. Master Mechanic (Chassis Engineering)
25. Requester
26. Requisitioner
27. Central Stores
28. Receiving Dock
29. Receiving Inspection
30. Purchasing (expediting)
31. Budget
32. Auditing

With a revised distribution list and routing, 8 copies now serve all essential purposes.

KAISER-FRAZER CORPORATION				7
WILLOW RUN, MICHIGAN				
E.C.R. 202	W. G. NO.	ACCOUNT NO.	SEPT. CH.	MODEL NO.
				511 & 512 ALL
LHD				52165
TO [ CENTRAL STAMPING AND MFG. CO. ]				PURCHASE ORDER NO. 144482
2755 W. FORT STREET				This number and/or Shipping Release number must appear on all invoices, Packing Slips and Bills of Lading.
DETROIT 16, MICHIGAN				DATE MAR 22, 1950
15043				SHEET 1 OF 2
SHIP TO	TERMS	BUYER		
WILLOW RUN	NET 10TH AND 25TH	L.M. COLUMBUS/BS 3/22		
SHIP VIA	F. O. B.	REC'D'S DEPT. DEL. TO		
OUR OPTION	DETROIT MICHIGAN	PRODUCTION STOCK		
DELIVERY AS PER WRITTEN RELEASES ONLY, INCLUDING RAW MATERIAL AUTHORIZATION, WHICH YOU WILL RECEIVE FROM OUR PRODUCTION PLANNING DEPARTMENT ON "VENDOR'S SHIPPING RELEASE" FORMS.				
ITEM NO.	QUANTITY	OUR PART NO. OR CODE SYMBOL	DESCRIPTION	PRICE
		733986	BRACKET - HAND BRAKE CABLE	\$10.51 M
IT IS UNDERSTOOD AND AGREED THAT YOU WILL FURNISH 100% OF THE NECESSARY MATERIAL NEEDED TO PRODUCE THE ABOVE PART.				
TOOLING ON P.O. 264493				
SAMPLES MUST BE SUBMITTED TO US AND WRITTEN APPROVAL AND ACCEPTANCE THEREOF BY OUR INSPECTION DEPARTMENT MUST BE RECEIVED BY YOU BEFORE PROCEEDING WITH PRODUCTION OF THIS ORDER.				
PARTS MUST BE MADE IN ACCORDANCE WITH DRAWING 733986 CHECKED 2-24-50 IN YOUR POSSESSION.				
REFER TO YOUR ORAL QUOTATION PER MR. DRYDEN ON 3-20-50. IT IS UNDERSTOOD, HOWEVER, THAT THIS ORDER CONSTITUTES THE ENTIRE AGREEMENT BETWEEN THE PARTIES.				
Acceptance of this order constitutes an acceptance of terms and conditions on face and reverse hereof.				
ALL CONTAINERS, DRUMS, CARBOYS, ETC., MUST BE SHIPPED ON A NO-CHARGE BASIS AND SHALL BECOME THE PROPERTY OF THE PURCHASER UNLESS OTHERWISE SPECIFIED HEREIN.				
KAISER-FRAZER CORPORATION L. S. MacKay, Director of Purchases				

number of copies was approved. This redesign resulted in a reduction of the number of copies from 32 to 8.

Registration on the form itself was revised to permit the typists better continuity in copying from the requisition. Certain quantities of

the order were purchased with commonly recurring shipping and delivery instructions pre-printed upon the form. Typing margins were increased over 30%, and this, in conjunction with the preprinted items, eliminated many two and three page purchase orders.

Purchase order changes, a nightmare to any purchasing department, were examined and analyzed over a period of time. The buying groups were preparing, on a request form, the changes they wished incorporated in the purchase order. It was apparent that there was an exact



duplication in that the typists copied from the request form on to the purchase order change notice. A large percentage of the changes fell into distinct classifications. For a period of time all these requests were screened by an individual who, as a result of his study, prepared a code system that would cover the majority of the changes. Copies of this system were placed with the buying groups and in the typing section. Instead of preparing the entire requests, the buyer indicated by code on a revised request form the corrections he wished to make, and the typists copied the code from the master list directly to the purchase order change.

For example, in those cases where Kaiser-Frazer ships material to its vendors for assembly or processing operations, a consignment agreement, a paragraph of some 10 or 12

lines, appears on the purchase order. But now, in preparing his request, the buyer merely writes: "Code G-2" and under that the part number, the quantity, the effective point, and the f.o.b. point.

Once initiated, the streamlining program spread rapidly. As each of the department heads and supervisors became more and more inquisitive as to why he and his subordinates were performing certain functions, one thing they discovered was that just as individuals develop certain habits during their lifetime, so do groups of individuals develop habits in their work. It was discovered that some functions originally started through some immediate need had been continued solely because no one had taken the time to check and see if the need still existed.

This was particularly true of reg-

istration functions. In the initial stages of operation, the necessity of constant follow-up and readily accessible information on requisitions and purchase orders had caused each group responsible for any processing action on these documents to set up "in" and "out" registers. Many of these were complicated and required posting of much more information than the group would possibly be called on to supply. In the case of one particular type of requisition, it was discovered that there were five almost identical registrations of the requisition from the time it reached purchasing until the final purchase order was issued. The same was true of documents received from planning and engineering regarding engineering and usage changes. Many of these registers were eliminated entirely. Others were simplified so that only the required information was posted. In other cases, time stamps and initials eliminated the register requirements.

MacKay credits much of the effectiveness of this streamlining program to the familiarization of all departmental personnel with the functions and duties of all other associated departmental personnel. Through such a familiarization program, he said, duplication of effort and lack of coordination was brought to light. Centralization of information and records resulted and more time was spent on the basic function of purchasing, namely, that of buying. Documentary processing time was cut down approximately 40 per cent.

"Naturally, these revisions were not accomplished easily," MacKay said. "We found that many of them could not have been brought about at all without the whole-hearted co-operation of other departments. The economies resulting in reduction of overhead were gratifying, and the entire unit was coordinated to the point of becoming a driving force capable of performing its responsibility efficiently. Credit for streamlining our purchasing department belongs to all members of the department, including some who may have been transferred to other duties. Such a reorganization necessarily is disturbing; old routines long established are difficult to change or eliminate. Reassignment of responsibility and activities required some training, and modification of previous work habits. To the best of our knowledge and belief, our present organization is now definitely established and will continue with only minor changes as may be required from time to time."

Close attention is given to packaging, handling and container costs. The reverse side of this form is used for analysis of shipping costs per piece, per container, and per trip.

VENDOR PACKAGING QUESTIONNAIRE		PG. 82
No. 28002		
KAISER-FRAZER CORP. WILLOW RUN, MICH.		DATE 3/21
P.O. NO. 144482	PART NAME Bracket - Hand Brake Cable	PART NO. 733986
VENDOR'S NAME Central Stamping & Mfg. Co.		BUYER E. W. Wade
VENDOR'S ADDRESS 2755 W. Fort St. Detroit 16, Mich.		
PLEASE FILL IN THE LOWER PORTION AND RETURN 2 COPIES PROMPTLY TO <input type="checkbox"/> PACKAGING ENGINEER <input type="checkbox"/> PURCHASING DEPARTMENT. KAISER-FRAZER CORPORATION		
GENERAL INSTRUCTIONS		
1. The part number, quantity, gross weight and order number must be shown on front and on side of every container, and in the case of bags and barrels, the identification should be on both ends.		
2. A tag showing the part number, quantity, gross weight and order number must be attached to 25 per cent of all bundled items.		
3. All bags must have linen tag attached, either by sewing same into seam or attaching with a wire, showing part number, quantity, gross weight and order number.		
4. The construction of carton containers must be minutely according to Rule 41, Consolidated Freight Classification No. 10.		
5. Part identification and quantity listings on unit containers must all be visible, or, two tags with unit load number, quantity, and per-chase order listings, must be attached in two different locations.		
6. Container ownership must be plainly indicated. Vendor-owned containers must also plainly indicate return instructions as per K-F purchase orders "Returnable Container Clauses."		
1. YOUR SHIPPING POINT 2755 W. Fort St. Detroit 16, Mich. FOB Our Plant		
2. DO YOU HAVE A TRUCK LEVEL LOADING DOCK? No RR CAR LEVEL LOADING DOCK?		
3. DO YOU HAVE EQUIPMENT FOR PALLET LOADING? Yes FORK <input type="checkbox"/> PLATFORM <input type="checkbox"/>		
4. WHAT IS YOUR PACKING MEDIUM (SUCH AS CARTON, PALLET, REG. WOODEN BOX, TRAY PACK, LOOSE IN T/L OR C/L)		
Steel Drums		
5. NO. PIECES PER CONTAINER 1 per 500 parts 6. WT. PER PIECE .3 lbs each or 700 lbs per drum		
7. WT. OF CONTAINER EMPTY 8. WT. OF CONTAINER LOADED		
9. SIZE OF CONTAINER FOR PALLET LOADING		
10. IF CARTON, GIVE MULLEN TEST, AS INDICATED BY SEAL ALSO STYLE OF CARTON: (REGULAR SLOTTED, FULL FLAP, ETC.)		
11. DO YOU DESIRE HAVING CONTAINERS OR PALLETS RETURNED? Yes		
SIGNED _____ TITLE _____ DATE _____		
FOR BUYERS USE ONLY:		
MEMO TO PACKAGING ENGINEER: IT HAS BEEN NEGOTIATED WITH THE ABOVE VENDOR THAT THE FOLLOWING CONDITIONS WILL APPLY IN THE USE OF RETURNABLE CONTAINERS ONLY:		
CONTAINERS PROPERTY OF _____		
TYPE BILLING <input type="checkbox"/> DEPOSIT <input type="checkbox"/> CONSIGNMENT <input type="checkbox"/> MEMO NO CHARGE, NO K-F RESPONSIBILITY AMOUNT OR VALUATION _____		
FOB ON RETURN TO VENDOR FROM K-F _____		
REMARKS _____		
SIGNED _____ (BUYER) DATE _____		

# Where We Stand

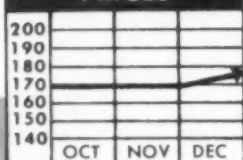
## PRODUCTION



Today's Business Trends As  
Reported In Current Statistics

	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Industrial Production Index . . . . . 1935-39=100		214	215	173	- 0.5	+23.7
Steel Production (Weekly). . . . . 000 net tons		1,944	1,981	1,742	- 1.8	+11.5
Electric Power Production (Weekly). . . . . mil KWH		6,909	6,551	5,881	+ 5.4	+17.5
Bituminous Coal Production (Weekly). . . . . 000 net tons		11,420	11,375	9,605	+ 0.4	+18.9
Auto, Truck & Bus Output (Weekly). . . . . units		152,196	167,582	46,667	- 9.2	+226.1
Petroleum Output (Weekly). . . . . 000 bbls.		5,678	5,823	4,919	- 2.5	+15.4

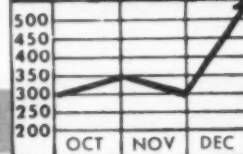
## PRICES



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
All Commodities (BLS). . . . . 1926=100		173.4	171.0	151.2	+ 1.4	+14.6
Farm Products . . . . . 1926=100		186.5	183.1	154.4	+ 1.8	+20.8
Metals & Metal Products. . . . . 1926=100		185.1	180.1	167.2	+ 2.7	+10.7
Building Materials . . . . . 1926=100		221.0	217.8	190.0	+ 1.4	+16.3
Steel Billets (Pittsburgh). . . . . net ton		\$56.00	\$53.00	\$52.00	+ 5.7	+ 7.7
Steel Scrap, heavy melting, Pitts. . . . . ton		46.25	43.75	30.75	+ 5.7	+50.4
Copper, electrolytic . . . . . lb.		.24 1/2	.24 1/2	.18 1/2	0	+32.4
Cotton, mid. 15/16" . . . . . lb.		.4410	.39 1/4	.3122	+12.3	+41.2
Rubber (Rib-smoked sheets). . . . . lb.		.74	.80	.17 7/8	- 7.5	+314.1
Wheat, No. 2. . . . . bu.		2.74 3/4	2.51	2.52 1/2	+ 9.5	+ 8.7

## TRADE

(Dept. Store Sales)



	BASE	LATEST	MONTH AGO	YEAR AGO	% OF CHANGE IN MONTH	% OF CHANGE IN YEAR
Dept. Store Sales Index (Fed. Res.). . . . . 1935-39=100		554	315	542	+75.9	+ 2.2
Commercial Failures (Dun & Bradstreet). no.		170	181	191	- 6.1	-10.9
Freight Carloadings. . . . . cars		766,743	862,184	668,825	-11.0	+14.6

## FINANCE

Stock Prices (Standard & Poor's). . . . . 1926=100	154.3	170.0	132.4	- 9.2	+16.5
Bank Clearings (New York). . . . . mil \$	8,714	6,553	8,921	+32.9	-23.2
Federal Reserve Credit . . . . . mil \$	21,344	19,853	18,731	+ 7.5	+13.9
Currency in Circulation. . . . . mil \$	27,759	27,388	27,701	+ 1.3	+ 0.2

# MANUFACTURERS' SALES, INVENTORIES AND NEW ORDERS

Value of Manufacturers' Sales  
Seasonally Adjusted  
(Millions of Dollars)

All Manufacturing	17,621	15,798
Durable goods	7,335	6,167
Iron and Steel	1,796	1,123
Nonferrous metals	440	380
Electrical machinery	759	721
General machinery (exc. elec.)	1,130	1,051
Motor vehicles & equipment	1,406	1,195
Transportation equipment (exc. motor vehicles)	267	279
Lumber and timber products	454	429
Furniture & finished lumber products	348	328
Stone, clay & glass products	397	364
Nondurable goods	10,286	9,631
Food and kindred products	2,790	2,685
Beverages	459	415
Tobacco products	271	250
Textile-mill products	1,069	994
Apparel	985	830
Leather and products	285	261
Paper and allied products	520	507
Printing and publishing	585	512
Chemicals and allied products	1,237	1,163
Petroleum and coal products	1,561	1,528
Rubber products	272	235

Book Value of Manufacturers' Inventories  
Seasonally Adjusted  
(Millions of Dollars)

All Manufacturing	29,320	28,923
Durable goods	13,716	13,373
Iron and steel	3,051	2,916
Nonferrous metals	968	956
Electrical machinery	1,550	1,509
General machinery (exc. elec.)	3,261	3,194
Motor vehicles & equipment	1,781	1,711
Transportation equip. (except motor vehicles)	838	809
Lumber and timber products	510	546
Furniture & finished lumber products	591	576
Stone, clay & glass products	544	529
Nondurable goods	15,604	15,550
Food and kindred products	2,750	2,799
Beverages	1,062	1,027
Tobacco products	1,553	1,541
Textile-mill products	1,939	1,950
Apparel	1,228	1,223
Leather and products	516	511
Paper and allied products	681	669
Printing and publishing	525	525
Chemicals and allied products	2,093	2,084
Petroleum and coal products	2,281	2,282
Rubber products	538	517

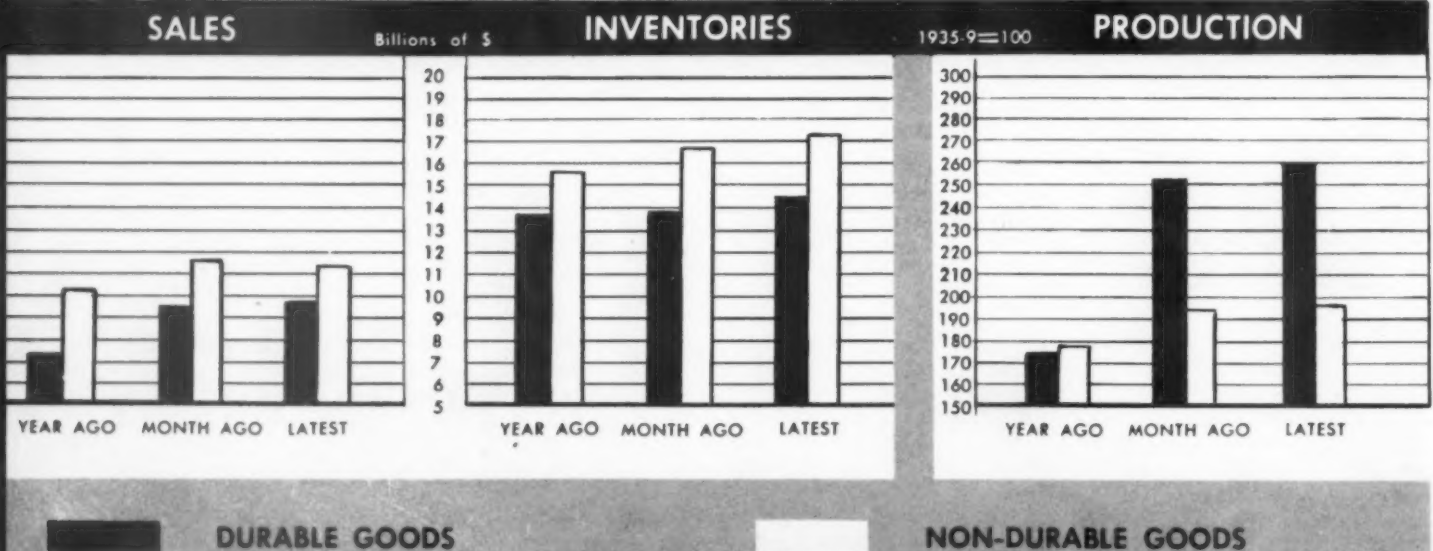
Manufacturers' New Orders (Unadjusted)

All Manufacturing	18,172	17,151
Durable Goods	7,099	6,892
Non-Durable Goods	11,074	10,259

	1949		1950			
	September	October	July	August	September	October
All Manufacturing	17,621	15,798	20,092	22,766	r20,965	21,167
Durable goods	7,335	6,167	8,670	10,060	r 9,392	9,705
Iron and Steel	1,796	1,123	2,178	2,471	r 2,345	2,464
Nonferrous metals	440	380	558	606	r 591	602
Electrical machinery	759	721	924	1,129	r 1,116	1,122
General machinery (exc. elec.)	1,130	1,051	1,374	1,554	r 1,458	1,594
Motor vehicles & equipment	1,406	1,195	1,459	1,716	r 1,449	1,474
Transportation equipment (exc. motor vehicles)	267	279	315	410	r 379	392
Lumber and timber products	454	429	603	695	r 656	656
Furniture & finished lumber products	348	328	409	485	r 433	447
Stone, clay & glass products	397	364	469	540	r 513	539
Nondurable goods	10,286	9,631	11,422	12,706	r11,573	11,462
Food and kindred products	2,790	2,685	3,245	3,257	r 3,038	3,032
Beverages	459	415	573	649	r 448	448
Tobacco products	271	250	287	299	r 261	267
Textile-mill products	1,069	994	1,206	1,544	r 1,354	1,278
Apparel	985	830	962	1,256	r 955	985
Leather and products	285	261	349	381	r 335	328
Paper and allied products	520	507	528	633	r 620	659
Printing and publishing	585	512	596	615	r 633	563
Chemicals and allied products	1,237	1,163	1,442	1,667	r 1,583	1,552
Petroleum and coal products	1,561	1,528	1,561	1,669	r 1,664	1,665
Rubber products	272	235	454	457	404	N.A.
All Manufacturing	29,320	28,923	29,706	29,736	r30,594	31,495
Durable goods	13,716	13,373	13,764	13,736	r13,934	14,291
Iron and steel	3,051	2,916	3,147	3,191	r 3,228	3,306
Nonferrous metals	968	956	973	965	r 959	937
Electrical machinery	1,550	1,509	1,633	1,630	r 1,632	1,660
General machinery (exc. elec.)	3,261	3,194	3,208	3,228	r 3,283	3,350
Motor vehicles & equipment	1,781	1,711	1,678	1,651	r 1,700	1,794
Transportation equip. (except motor vehicles)	838	809	660	663	r 672	716
Lumber and timber products	510	546	576	550	r 560	593
Furniture & finished lumber products	591	576	675	664	r 677	685
Stone, clay & glass products	544	529	542	534	r 530	543
Nondurable goods	15,604	15,550	15,942	16,000	r16,660	17,204
Food and kindred products	2,750	2,799	2,831	2,820	r 2,928	3,028
Beverages	1,062	1,027	1,037	1,048	r 1,118	1,102
Tobacco products	1,553	1,541	1,467	1,562	r 1,680	1,683
Textile-mill products	1,939	1,950	2,274	2,285	r 2,372	2,603
Apparel	1,228	1,223	1,448	1,455	r 1,520	1,567
Leather and products	516	511	568	573	r 589	588
Paper and allied products	681	669	695	671	r 678	688
Printing and publishing	525	525	601	593	r 625	633
Chemicals and allied products	2,093	2,084	2,041	2,043	r 2,108	2,169
Petroleum and coal products	2,281	2,282	2,046	2,050	r 2,108	2,196
Rubber products	538	517	501	483	502	N.A.
All Manufacturing	18,172	17,151	22,046	27,134	23,581	24,459
Durable Goods	7,099	6,892	10,553	13,863	11,500	11,994
Non-Durable Goods	11,074	10,259	11,493	13,271	12,081	12,465

r - revised n.a. - not available

## SALES, INVENTORIES AND INDUSTRIAL PRODUCTION





# Straws in the Trade Wind

● The Securities and Exchange Commission and Department of Commerce have issued a joint report predicting that capital outlays for new plant and equipment in the first quarter of 1951 will set a new record. It is forecast that \$4,800,000,000 will be spent, 30% more than was expended in the first quarter of 1950. Final figures on new plant and equipment expenditures for 1950 are expected to reach \$18,000,000,000, about the same amount that was spent in 1949. The preliminary estimates of the two agencies indicate that a new record for plant expenditures will be set in 1951.



● Regulation W has dealt a "paralyzing blow" to the consumer credit industry, according to a survey released by the Consumer Credit Letter, published by the National Research Bureau. Seventy eight per cent of the firms in the field have experienced business declines since the credit restrictions became effective, it is indicated. The declines have a mean of 22%. A separate survey of manufacturers conducted in conjunction with the overall study found that only 3 firms out of 25 reported that credit controls have affected production in any way.

● During the year ended June 30, 1950, total Government debt reached \$281,000,000,000. This includes both state and local debts. It figures out to \$1,865 per person in the country. A record high for Government debt was set in 1946, when it reached \$285,300,000,000.

● The National Security Resources Board has issued 48 certificates of necessity for accelerated tax amortization in the steel and refractory industries. More than \$500,000,000 worth of tax write-offs for expansion are involved.

● A tax rise of \$25,000,000,000 a year for the next two years to help fight both inflation and the "partial war" in which we are now engaged was advocated by Lewis H. Brown, chairman of the board of Johns-Manville Corporation. Mr. Brown, speaking at the recent convention of the National Association of Manufacturers called for a "pattern of taxation that would help win the partial war rather than make it more difficult". The pattern would include moderate excise taxes on everything but bare necessities; heavy excise taxes to retard the sale of items that interfere with war production; a defense super-tax added to the peacetime income taxes of individuals and corporations.

● Steel production in Great Britain reached the highest rate in history during November. Output in that period was at an annual rate of 17,472,000 tons. The previous peak has been in March, at 17,147,000 tons. National-

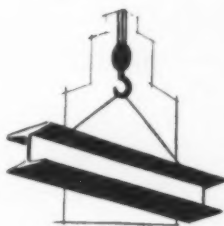
ization of the steel industry is expected to go into effect next month.

● Jones & Laughlin Steel Corporation, the nation's fourth largest steel producer, has begun a \$228,000,000 expansion program that is expected to increase production capacity to 6,400,000 tons, or a boost of 32%.

● High-grade iron ore from Venezuela will be shipped to the United States, beginning this month, by Bethlehem Steel Company. Initially, shipments will be at the rate of 2,000,000 tons a year . . . Reserve Mining Company—jointly owned by Republic Steel Corp. and Armco Steel Corp.—has announced plans for the construction of a pilot plant at Babbitt, Minn., to produce taconite pellets. The plant will be used to test certain phases of the process of changing taconite into high-grade ore. Operations are expected to begin within a year.

● The Department of Interior has granted a certificate of necessity for the construction of a new aluminum plant at Kalispell, Mont. The plant, with 72,000 tons capacity a year, will be built by the Harvey Machine Company, Inc., of Torrance, California . . . A report from London indicates that an Anglo-American group, with the help of the Economic Cooperation Administration, will try to make Uganda, in South Africa, the fourth largest wolfram supplier in the world. Wolfram, from which tungsten is derived, is becoming increasingly scarce since war broke out in Korea. Production in Uganda will be raised by 50% if the plans are successful.

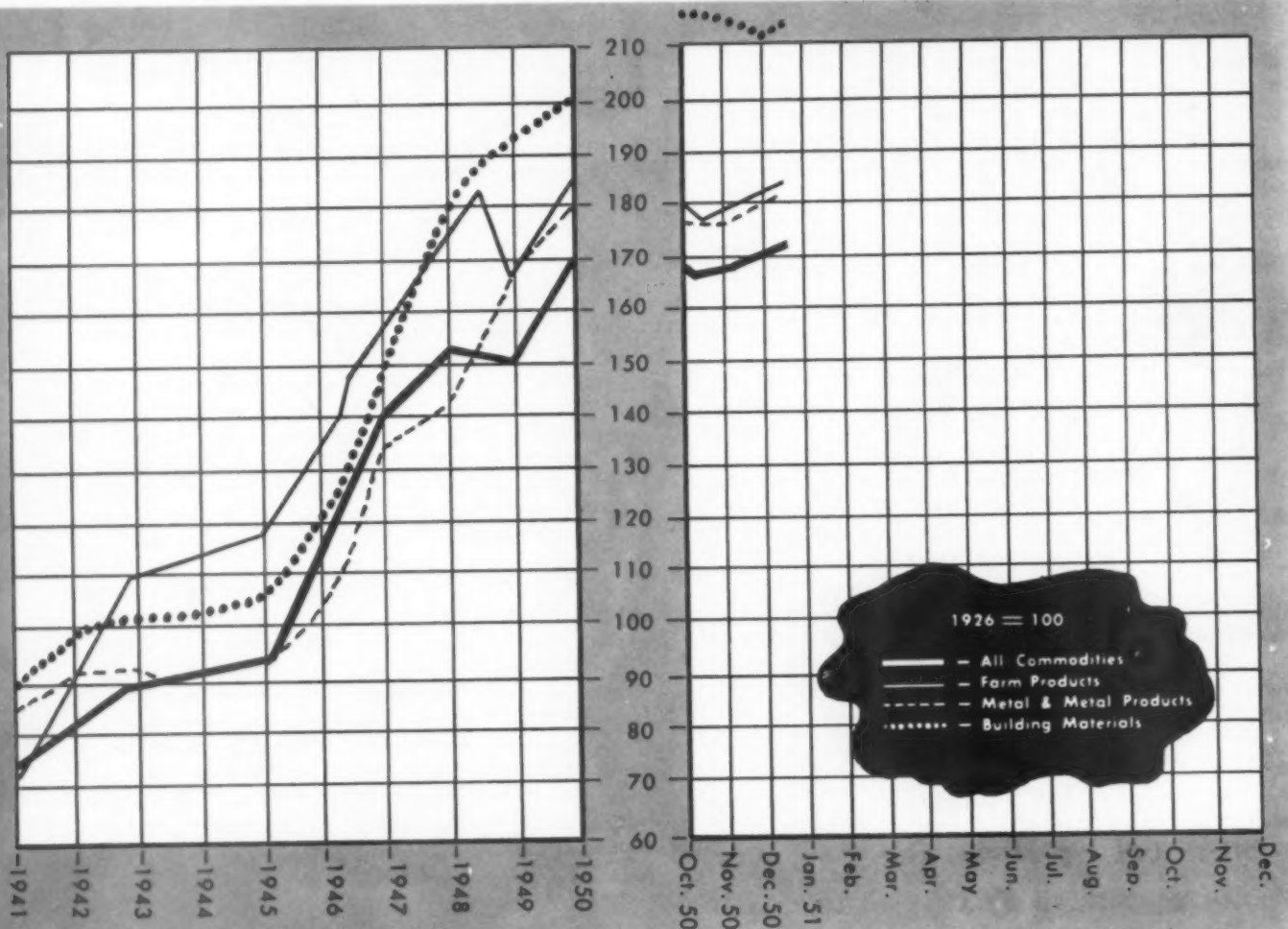
● Eastern railroads have asked the Interstate Commerce Commission to approve a 4% increase in freight rates and charges. If approved, the new rates would add approximately \$141,000,000 to the roads' revenue.



● Sales of natural gas during the third quarter of 1950 totaled 741,000,000 million cubic feet, an increase of 18.7% over the like quarter of 1949, according to the American Gas Association. For the year ending September 30, sales of natural gas amounted to 3,533,000,000 million cubic feet, a gain of 15.9% over sales in the same period a year earlier.

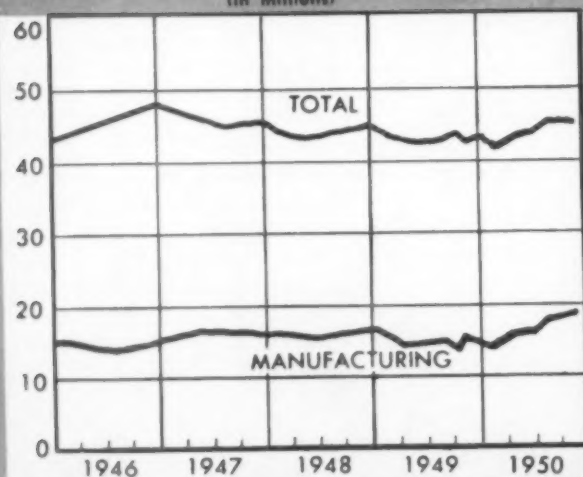
● The weekly pay check of a married factory worker with two children, even after higher taxes and the post-war rise in cost of living, now commands 27% more goods and services than it did in January, 1941 a survey by the National Industrial Conference Board reveals. However, "real" weekly take home pay is still 3% to 5% below the wartime highs, when the average work week was more than half a day longer than it is now.

## The Price Picture

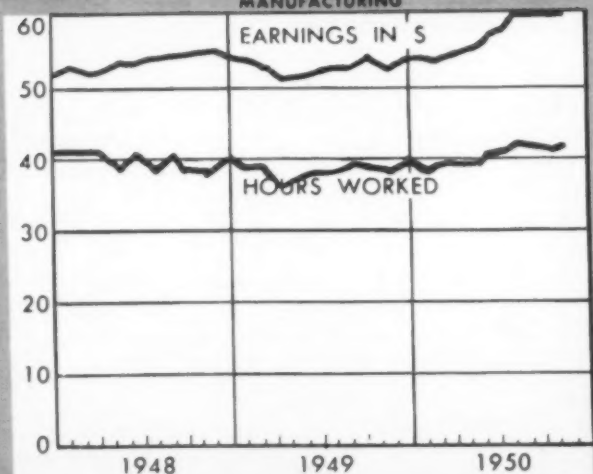


## Employment & Earnings

**NON-AGRICULTURAL EMPLOYMENT**  
(in millions)



**AVERAGE WEEKLY EARNINGS AND HOURS**  
MANUFACTURING



SOURCE: U.S. DEPT. OF LABOR

# The Pulse of Business

The country's preparations to meet whatever perils may face it in the next year began moving into higher gear following President Truman's declaration of a national emergency. All concerned appear to be fully aware of the dangerous tight-rope we are being forced to walk. We must be ready to fight at almost any moment, yet at the same time we must be in a position to cooperate fully in a just and genuine peace. Remote as the latter condition appears, all our traditions and our intelligence demand that we exhaust every honorable means of obtaining it. Fortunately, despite the inevitable sharp differences of opinion that exist in a democracy, the country appears basically united both on the necessity of facing up to the Russian threat, and working with the rest of the free world to contain it.

## Government Batting .500

The first tentative steps at mandatory controls were taken when the Government instructed G.M. and Ford to roll back to December 1 prices on their new models. To date, the Government was batting .500, with Ford agreeing and G.M. disagreeing. Stripped of the emotional element, the G.M. reaction is understandable. Its 1951 models are new, improved, and built with higher-cost materials than previous models. Aside from the rather curious choice of a \$1500-\$3000 product as the first object of controls, the move illustrates the difficulty of trying to roll back prices to an arbitrary date in a progressive, rapidly-changing economy.

The Economic Stabilization Agency had just issued its request to industry and business for voluntary price ceilings as this was written. The agency asked producers of goods and services to freeze prices so as to keep profits at the average of 1946-49, and to roll back any price increases since December 1. Compliance was asked "to avoid the necessity of further mandatory price controls". It was stated that a similar request was being prepared by the Wage Stabilization Board to obtain voluntary ceilings on wages. Reaction to this attempt at an "honor system" was guarded, but some business circles called the wording of the request quite vague

and were not too hopeful that it would achieve its objective. Rowland Jones, Jr., president of the American Retail Federation, with membership of more than 500,000 retail stores, had this to say:

## Vague In Some Aspects

"As an emergency and temporary step to minimize price increases the language of the announcement is vague in some aspects. Certain of the principles suggested, if carried forward in formal, full-fledged mandatory price regulation, could raise obstacles to the end objective of increased production and efficient distribution which are so essential to the war effort".

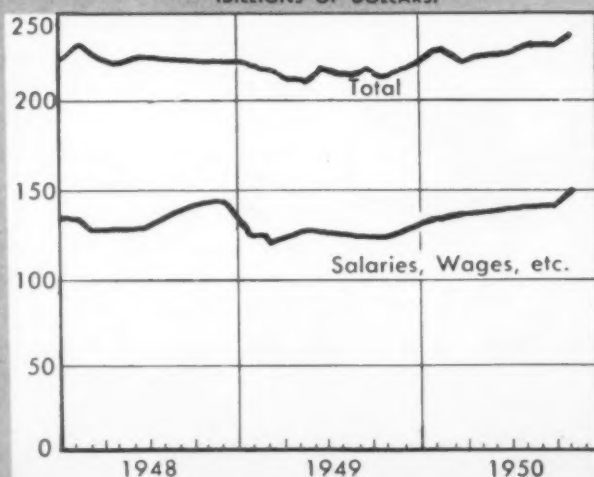
Appointment of General Electric's Charles E. Wilson as Director of the Office of Defense Mobilization was received with widespread and hearty approval. It indicated that our mobilization effort, heretofore scattered among several independent agencies, is now being given positive direction and real coordination. Mr. Wilson, widely known and admired for outstanding achievements in both industry and Government service, will have authority over production, procurement, manpower, transportation, and wage and price controls. From all accounts Mr. Wilson is equipped with the great abilities and kind of genius that efficient operation of such an arrangement calls for. He was executive vice-chairman of the War Production Board under Donald M. Nelson in World War II, and is noted for having done much to break production bottlenecks in that period.

## Defense Taking More

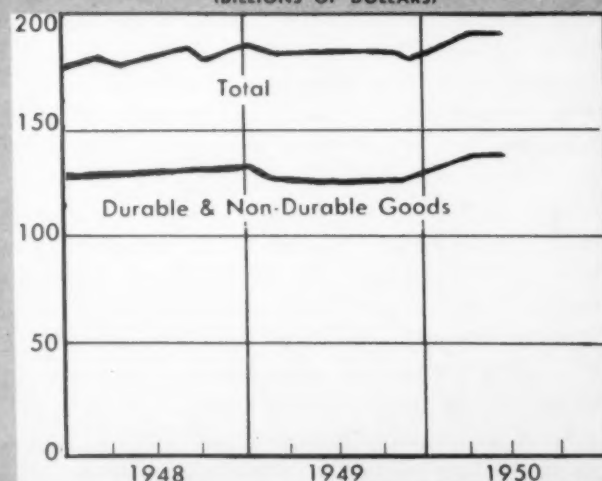
The early estimates of how deeply "defense" requirements have almost doubled and the \$53,000,000,000 we will probably be spending by the end of this year to combat Russian aggression represents about 20% of our total national product. The consequences of this are obvious — higher taxes, scarcities, greater sacrifices. It has been said that Stalin, unlike Hitler, has realized the tremendous depths of our material resources and actually admitted that the "miracle of American production" was the greatest factor in winning the last war. What he seems to underestimate is the depth of our spiritual resources, the spirit of courage and resolution that a free people can display when tyranny challenges. In its own way, the country was getting ready for the test, should it come in full force.

## Personal Income & Expenditures

PERSONAL INCOME  
(BILLIONS OF DOLLARS)



PERSONAL CONSUMPTION EXPENDITURES  
(BILLIONS OF DOLLARS)





# Materials & Markets

## STEEL



The pressure on steel continues to mount and nobody dares guess where it will all end. As this was written, steel production for the current week had exceeded 100% of theoretical capacity for the 25th time in 1950 and there was every indication that it would maintain that rate for some time

to come. Despite this enormous production and the tremendous expansion of the industry planned or already begun, the demand for steel swells daily and many users are beginning to feel the pinch severely. There's little or no hope for relief, considering the present international situation and our present state of emergency. Figures now available show that as early as October, the defense and essential industries had begun to take greater amounts of steel than previously. Two months and several crises later this shift is probably more pronounced, although the later figures were not available at this writing. The industries getting more steel are the railroad car and locomotive builders, and the jobbers and manufacturers of industrial and electrical equipment. Principal users taking a cut in steel shipments are the automotive and appliance industries. No special allocations have been made for the oil industry as yet, but trade circles believe they will not be long in coming. Failure of the Government to specify just how much steel will be required for military and related purposes is reported to be causing confusion in the mills because of the consequent difficulty in scheduling production.

There is little doubt that defense and related orders are going to mount, and mount fast, leaving a dwindling supply for others to scramble for. As a result there is widespread talk that the Government will step in shortly and establish mandatory rules for the distribution of steel.

The steel price increases announced early in December were apparently accepted with good grace all around, a somewhat unusual occurrence. Following the stepped up national emergency program, however, it was felt that the Government might order price roll backs that would nullify those increases and take prices perhaps as far back as June, 1950, prior to the Korean war. Up to the time this was written there was obvious reluctance on the part of steel industry leaders to comment specifically on the Economic Stabilization Agency's request to industry to rescind recent price increases. Those companies whose price boosts reflected only the costs of the steelworkers' wage rise would probably not be affected by the request, but others could be.

Scrap prices were at a new high under pressure of the heavy steel production, and it is reported that the

E.S.A. has told representatives of the trade that prices must be stabilized as a contribution to the national defense effort. An official announcement on the subject is expected soon.

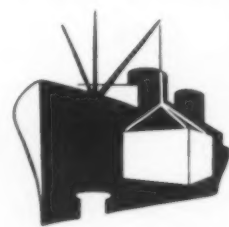
## NON-FERROUS METALS

Cutbacks in use of non-ferrous metals, designed to make greater supplies available for defense purposes, were announced during the month, and there were indications that more controls were coming, particularly on prices, and later on end uses.

These are the orders recently issued: brass mill and copper wire mill products for non-defense production are limited by total weight to 85% in January, 85% in February and 80% in March, 1951, of the average quarterly production and use during the first six months of 1950; non-defense consumption of nickel is limited during the first quarter at 65% of the average quarterly consumption during the first six months of 1950; non-defense consumption of aluminum is limited to 65% of the base period (first six months of 1950) during the first six months of 1951, under NPA Order M-7, but an amendment allows January usage at 80% of the base period, and February at 75%. NPA order M-15 permits the non-defense production and use of zinc products at an average quarterly rate of 80% of the production or use during the first six months of 1950. Use of zinc products in any single month during a calendar quarter may not exceed 40% of the total permitted for the quarter.

NPA got closer to end-use control with its order on tin, calling for a 20% cut in civilian use during February and March, and forbidding the use of new tin where secondary tin can be used. The order also limits tinplate manufacturers' inventories of pig tin to a 120-day supply, and all other pig tin users to a 60-day inventory.

Demand for lead has been creeping up with increasing amounts being brought in from foreign sources. Prices are currently running at two levels, with users pay-



ing 17 cents per pound for the domestic metal, and 18 1/2 cents a pound for foreign. It is expected that an overall price of 18 1/2 cents will prevail, and then the price of foreign lead will advance when an additional 1 1/16 cents per pound duty is applied in January.

Fabricators are reported asking the Government to rescind this additional duty, which is scheduled to be imposed on January 1, but at this writing there was no indication that such action would be taken.

A charge that eastern industrial consumers are buying black market zinc at 40 cents a pound, double the

open market quotation, while western mine dumps contain large quantities of zinc-rich ore that cannot be moved to market, was made by the executive secretary of the Colorado Mining Association. He asked that the Government offer financial inducement to marginal metal miners to make it profitable for them to transport their ore to the nearest smelters. He said transportation costs now eat up all profits.

The International Nickel Company announced a new base price of 50 1/2 cents a pound for electrolytic nickel in the United States. This includes the 1 1/4 cent duty. The new price is about 45% above the average price prevailing for all markets in the pre-war years. Demand is still running far ahead of supply, despite the fact that the amount available for consumers and Government stockpiling this year was the largest for any peacetime year in the Canadian nickel industry.



Production of primary aluminum in the United States during October was about 2,000,000 pounds above the average monthly output during the third quarter of the year. Expansion plans of the industry are going

ahead rapidly as more high-cost power is being made available to reactivate reduction equipment previously idle for lack of economical power. An official of one of the leading aluminum companies revealed that the entire industry plans to boost its output by about 17% in 1951.

## CHEMICALS

Little hope for an easing in the heavy demand for sulfur, already far ahead of production, was voiced at a recent meeting of NPA officials and industry representatives. It was indicated that some Government action would be forthcoming to assure equitable distribution of sulfur on the domestic market and maintain necessary exports to Marshall Plan and other friendly nations. Reserves must also be built up, it was pointed out, necessitating some action to prevent 1951 consumption equalling production.

A new order to the alkali-chlorine industry to assure equitable distribution of DO orders and to give ordinary users a fair share of the remaining supply of chlorine is in the making at NPA. One of the provisions will permit small users to consume chlorine in the same amounts used in comparable months in 1950.

Supply of glycerine is growing tighter and there seems to be little prospect of an easing in the situation for several months. Two leading producers raised prices by 3 cents a pound during the month.

Demand for benzol continued to go higher and supplies grew tighter. Short supply of benzol derivatives is reported affecting numerous important industries. A dual price situation on benzol existed at mid-month with 30 cents per gallon quoted at some shipping points, and 35 to 37 cents a gallon at other points. It was believed that the entire market would rise to about 35 cents.

## FUELS

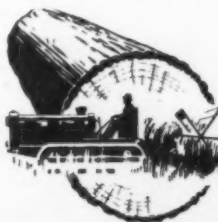
Acting on widespread reports that a rise in the price of crude oil was imminent, E.S.A. officials called on the petroleum industry to "hold in abeyance" any advances in the prices of crude or refined products. There were indications that the petroleum industry would meet the Government's request. In the event rises are contemplated, the Government asked that it be given a 7-day notice. Several California producers of crude oil who had raised prices 25 cents per barrel and later refused to rescind them were scheduled to send representatives to a conference with the stabilization agency.

Bruce K. Brown, deputy petroleum administrator, recently stated that he saw no probability of gasoline rationing in this country for some time to come. "The military currently uses less than 5% of the petroleum consumed in U. S.," he said, "and there can be much more mobilization without straining present supplies."

## MISCELLANEOUS

Use of natural rubber consumption will be reduced 28% in January and February from the November level by an NPA order (M-2, Amended). Total civilian rubber consumption, however, will be maintained at about 90,000 tons a month, since synthetic is now coming in in good supply. After remaining at 18 1/2 cents a pound for a long period, the price of synthetic finally went up during December. GR-S is now 24 1/2 cents a pound, GR-I 20 3/4 cents a pound . . . Heavy demand for almost all types of paper and paper products continues, and the pressure on prices is upward, particularly on pulp, paper board, high grade papers and kraft. Defense orders for numerous items has increased the indirect demand for domestic-type fiber boxes, according to an NPA report, and the demand for fiber containers is probably greater than that for paper . . . Although the plastics industry continues to expand, the outlook for supplies of major items in 1951 is not an optimistic one.

An official of the Goodrich Chemical Company stated that the vinyl industry will produce almost 300,000,000 pounds of resin this year, but that amount will not satisfy demand. Shortages of raw materials, particularly chlorine are retarding the industry, he declared. Prices on both vinyl products and polystyrene advanced during the month.



## NATIONAL TRENDS:

### Prospects for 1951: Production Headed Up, Growing Emphasis on Defense

It's prediction time again and now more than ever it's good advice to talk softly and don't stick your neck out. The customary pitfalls facing the forecasters — the variables of national and international politics, labor troubles, and even the weather — would be almost welcome in comparison with the present situation. We're fighting a war that isn't a war, against an enemy everybody knows but nobody calls by name. We are told our very existence is in peril, yet the all-out mobilization this would ordinarily call for might disrupt our complex economic machine before we had cause to put it to use, making us weak and vulnerable should the Soviet Union decide to bide its time for a few more years. So we have to go along half on foot, half on horseback. Under such conditions trying to assess the future by the standard methods becomes extremely difficult.

Nevertheless, experts in the various fields have done the reasonable thing by making some basic assumptions and working from there to give a fair picture of what is to come in the vital areas of our economy. Assuming that full-scale World War III does not break out, and that U. S. continues its present rate of defense build-up, the outlook shapes up something like this:

#### INDUSTRIAL PRODUCTION

Industrial production is expected to maintain its upward trend. Although the transition from the manufactured civilian goods to military material may cause some disruption, it is believed that the Federal Reserve index will continue to climb after a possible slight decline in the first quarter. The latest Cleveland Trust Company business bulletin figures that the volume of industrial production in 1951 will be at least 5% higher than in 1950.

#### STEEL PRODUCTION

Mills poured about 97,000,000 tons of steel in 1950, 7,500,000 more tons than in any previous year, and they are out to top that record by a substantial margin this year. Large expansion plans are proceeding rapidly in the industry, and a production capacity of at least 110,000,000 tons is expected by the end of 1952. 5,000,000 more tons will be available in 1951 and be put to use immediately in view of the tremendous demand. This would mean an increase of between 5% and 6% in steel production.

#### AUTOMOTIVE PRODUCTION

Estimates of the anticipated cutback in the output of passenger cars in 1951 have grown progressively higher in the period of a few months. The figure was first put at 25%, and most recently Henry Ford II said he thought it would be closer to 50%. Most experts tend toward the higher figure, and it appears that the cut will be at least 35% and perhaps considerably higher. That may put production down to almost half of the approximately 8,000,000 machines that set the all-time record in 1950. Truck production, which hit over 1,250,000 in 1950 will be cut by about 20-25% it is believed.

#### CONSTRUCTION

The decline in home-building from the record heights of 1950 is already in full swing because of severe credit restrictions put in force during the summer. Government officials believe that about 850,000 starts will be made this year, as compared with approximately 1,300,000 in 1950. This 35% drop is expected to be taken up somewhat in non-residential construction.

New plant and equipment expenditures in 1951 are expected to set a new high, according to a joint forecast of the Securities Exchange Commission and the Department of Commerce. For the first quarter alone, the outlay is estimated at \$4,800,000,000, or 30% more than in the corresponding quarter of 1950.

A quick look at some of the other basic indicators of business activity shows important changes. The wholesale price index, creeping steadily upward, will probably be under considerable pressure from Government controls, and from agreements among producers and users of such vital materials as rubber, tin, wool, etc. to prevent prices from getting out of hand. Employment may suffer in the initial phases of the swing over from civilian to military production, but will grow increasingly tight. Retail sales will stay high and goods will be in fairly good supply, at least for the first 3-5 months. Imports will continue their recent strength as our efforts are directed toward domestic interests, and excess of imports over exports may be established during the year. And to add a note of finality, taxes, in case anyone thought differently, will go higher and higher.



## A 10-Point Plan for Peaceful Persuasion

By David Markstein

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### 10 RULES FOR SUCCESSFUL NEGOTIATION

1. Let the other fellow do the talking—first.
  2. Don't put the other fellow on the defensive so that he will convince himself of his position.
  3. Cultivate the technique of agreement and rebuttal—"Yes . . . but".
  4. Find the areas of agreement and start persuading from that point on.
  5. Don't ridicule. Use a lever, not a sword.
  6. Ask questions to develop the argument in his own words.
  7. Try to see the other fellow's point of view. It will clarify your own. Besides, you could be wrong.
  8. Don't overlook the appeal to the emotions. Many reasons have their origin in trying to rationalize a feeling.
  9. Define the issue and don't waste time on unimportant or irrelevant detail.
  10. Get agreement step-by-step and you'll have agreement on the main issue.
- 

EVERY purchasing agent encounters occasional situations which are explosive—fraught with the danger of hot argument. It may be a matter of specifications, prices, terms, delivery promises, quality. Whatever the subject or the cause, hot words won't help the situation, but a 10-point plan for winning Mr. Opponent over to your way of thinking will.

Sales annals are full of examples of the fellows who win the argument but lose the sale. As a result of these experiences, sales techniques have been developed to keep discussion within the bounds of peaceful persuasion. Today the shoe is on the other foot, and it is the purchasing agent who must exercise salesmanship and do the persuading in the mutual process of negotiation. He can profit by following the salesman's rules when faced with an explosive situation in which the flint and tinder of opposing opinions threatens to spark a fire of hot words.

#### Rule 1—Listen

The first rule is to listen. State your position briefly, then let him have the floor. If there are differences of opinion, his objections must be overcome skillfully before you can change his ideas. But before you can counter his objections, you have to know in detail what they are. So hear him—dry.

When both parties simply say "No", the negotiation is at an impasse. You have to know *why* that is his answer. There is always a reason, though not always a good or an unanswerable reason. So—tactfully, of course—encourage him to tell exactly what his objections are.

When a man has stated his side fully, he is ready to listen to your

side. Until then, he is busy thinking of things with which to answer your points. But by getting his answers out into the open, you dry up most of the springs of his objections.

#### Rule 2—Avoid Defense

Don't let the other person get into the position of defending his ideas. The surest way to convince a man of the justice of his argument is to let him defend it. In defending it, he thinks of a lot of reasons why it is right. Since they are his own reasons, he is convinced of their truth. It is a characteristic of salesmanship that the first step is to "sell" oneself.

That's exactly what happens when your "discussion opponent" is permitted to defend his position. So, instead of putting him on the defensive, it's better to apply—

#### Rule 3—"Yes . . . but"

The "Yes . . . but" technique is very simple. It consists in seeming to agree with the other person, then turning his own argument into a clincher for your side of the case.

When he makes a statement, you accept it and promptly turn it back on him by saying, "There is a lot in what you say . . . but there is also this to consider," or "Yes, I see what you mean . . . but," or "You're right on that . . . but."

#### Rule 4—Find a Common Ground

There's more to the "Yes . . . but" system than a fast technique. It is predicated on the sound practice of basing negotiations on established "areas of agreement". Find a common ground, a point up to which you can agree, and work from there. There are always some sides to the question upon which you and the

fellow across the desk can agree. Find these, and you have a foundation upon which you can begin to build your structure of persuasion.

#### **Rule 5—Don't Ridicule**

The other fellow's point of view may be as wacky as a Russian delegate's proposal for peace, but you will only succeed in making him mad and stubborn if you point it out in that light. Ridicule is one of the sharpest weapons in the arsenal of words, but it is a two-edged sword. For changing the ideas and viewpoints of people, the tool you need is a lever, not a cutting edge.

#### **Rule 6—Ask Questions**

One of the wisest philosophers and best teachers of all time was Socrates. He had a system for teaching—or changing people's ideas—that hasn't been beaten in all the thousands of years since he began using it. Socrates did it with questions.

Tactful and persistent questioning will bring out the facts. It is particularly effective in that it puts the answers in the other fellow's own words. If his position is weak, or wrong, he is bound to see it that way eventually because he says so himself. But the questions must be tactful. Incidentally, one of the most effective ways of avoiding ridicule is to put a question mark at the end of every sentence.

#### **Rule 7—Put Yourself in His Place**

The whole process of negotiation and discussion is predicated on the recognition that there are two sides to every question. There is always the possibility it's *your* ideas which may be all wet. If you are the one who is wrong or unreasonable, it's a good thing to find it out as early as possible in the discussion.

And when you are in the right, having a grasp of the other fellow's point of view enables you to take the tactful steps for winning him over. Putting yourself in his position gives you a wide view that embraces all angles of the question, revealing the weaknesses as well as the strength of his argument.

#### **Rule 8—Reason plus Emotion**

Purchasing people are prone to proceed on the basis of objective reasoning. There's much to be said for this attitude, but it overlooks another important side of human behavior. Maybe the facts of pure, objective reason are not the real starting point in forming an opinion or taking a position.

All too often, we humans form our opinions from our emotions and sympathies. Then we start to rationalize and to marshal reasons to support those opinions. The art of salesmanship learned long ago to appeal to the emotions as well as to

the reason. That appeal is frequently the most effective. Since you are practising salesmanship, don't forget to use the tools of emotion as well as the impersonal tool of logic.

#### **Rule 9—Get to the Point**

Many a discussion becomes an argument, and many an argument founders into impotence, because too much attention is centered upon the sideline issues or upon the points on which there is substantial agreement. One of the big advantages of establishing these areas of agreement early in the discussion is that it defines and focuses attention on the real points of issue. That is where this whole process of persuasion has meaning. Getting quickly to the point of the business allows it to be disposed of without too much wasted time.

#### **Rule 10—Step-by-Step Agreement**

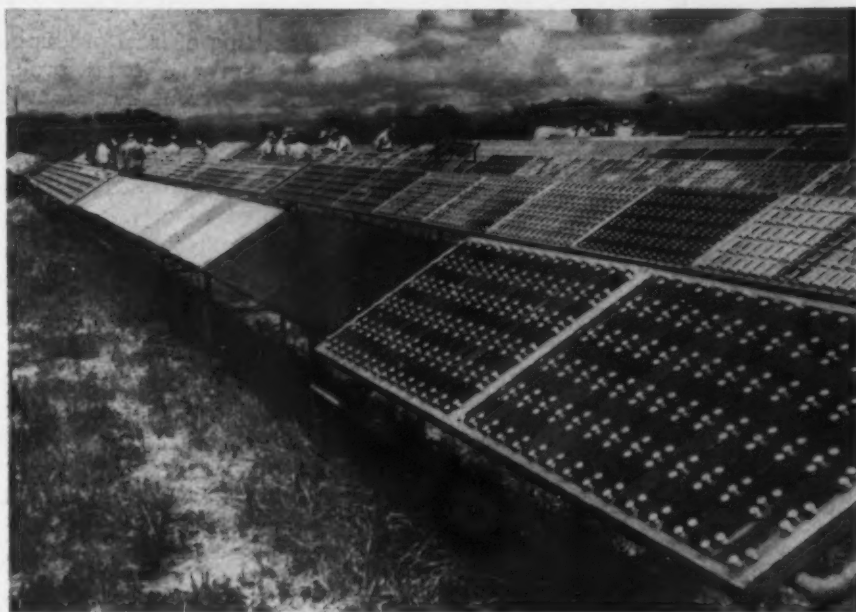
It is a mathematical axiom that the whole is equal to the sum of its parts. That is likewise true of opinions and ideas, but the final desired opinion may not be the best place to start. Sometimes the "package" may be distasteful although the individual parts or steps, separately considered, may be wholly acceptable.

A couple of years ago, Congress passed the highly controversial Taft-Hartley Act. The labor unions immediately condemned it as a "slave labor law", and they have not receded from that position. Yet when business researchers have interviewed union members and asked them, "Are you in accord with this point in a labor law? Of that point? Of the third point?"—without naming the Taft-Hartley Act—they discovered in amazement that the "slave labor law" which union members rejected and detested as a package was overwhelmingly approved in a point by point consideration! If it had been presented as a series of particular measures instead of an all-inclusive regulation, the chances are that it would never have become such a controversial issue.

In your own discussions, it is a good idea to plan your campaign in a series of points leading logically and inevitably to the desired conclusion. Then try to get the other party to say "Yes" to each step in turn. When you have gone through the entire argument point by point, getting minor agreements along the way, the conclusion is clear. You are the winner!



"We always meet our competitor's prices. When he raises, we raise."



## Science Against the Sea

Atmospheric test. Thousands of specimens are carefully observed under the action of sun and sea spray.

**M**ANY the ballad and the verse written of the surging sea, that beckons with adventure and offers a broad highway, for world-wide exchange of goods. Little is said, however, of the sea as the most corrosive of all natural forces. Its spray and myriad live organisms can make shambles of steel and wood, can waste away the surface of metal, and can corrode most unprotected surfaces.

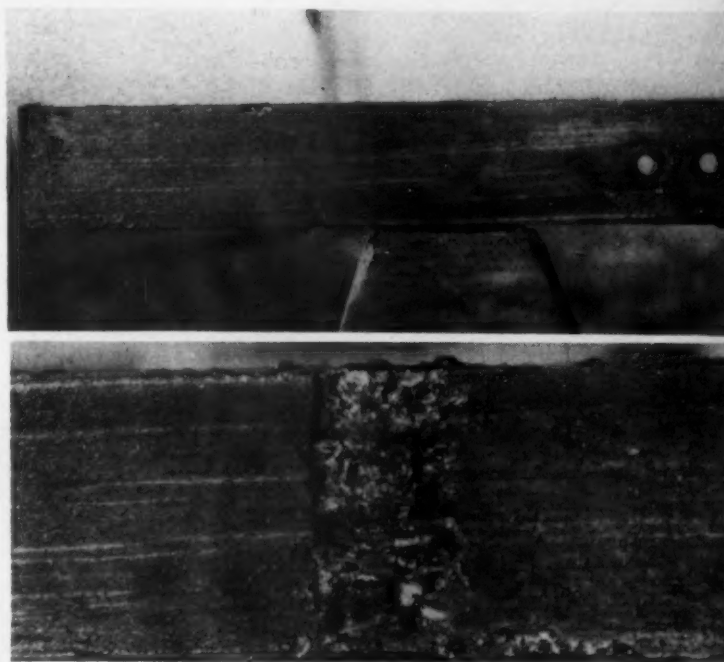
To some, corrosion is an inevitable process—like the plant manager who was asked about the problem of corrosion in a pump that was used in brine. His action was that he had no problem of corrosion; he had always had to replace the pump every six weeks, and there was nothing to be concerned over.

Still, there are those who have waged against this destructive force.

Some 15 years ago, the International Nickel Company decided to test the corrosive action of the sea by immersing nickel and other alloy steels in sea water at Kure Beach, North Carolina. There the wind, the sun, and the sea made for a natural laboratory.

What began as a simple test in 1935 has become an extensive testing ground for practically every material which, in its normal use,

Wood specimen removed from immersion test. Cutaway section reveals attack by marine organisms.



comes in contact with the sea, brine, marine conditions or marine atmosphere.

In the 15 years during which the tests have been conducted, more than 15,000 specimens have been immersed in sea water, and more than 20,000 have been exposed to the marine atmosphere.

What began as the simplest of all

tests—namely, exposure to the elements—now is a most scientific venture. International Nickel has become the scientific instrument for conducting the tests, for it has thrown its laboratories wide open for all materials, and to their producers for making comparative studies of how their products withstand the sea, wind and sun.





View under the test dock, where specimens are immersed in sea water.

The Nickel Company makes but few reservations, but these are fundamental to research. The first is that the tests are purely of a scientific nature; the objective is to discover and learn.

Second reservation is that the results of the tests be exchanged among all those who may be interested, so that all may share in the findings.

The tests and findings are probably of greatest interest to the Navy, which, in the very nature of its operation, encounters all of the problems of corrosion and marine life that can reduce the effectiveness of its ships afloat and its stations ashore.

Every possible segment of a ship that suffers attack from corrosion is the subject of study at the marine testing laboratories. Steel plate and nylon rope, anti-fouling paint and methods of killing marine life—all are the subject of study.

#### Research Improves Products

The research is of obvious interest to the purchasing agent buying materials or parts for an end product which may in some way be exposed to the sea, brine, or marine atmosphere. The tests determine resistance to corrosion, and aid producers of materials to improve their products.

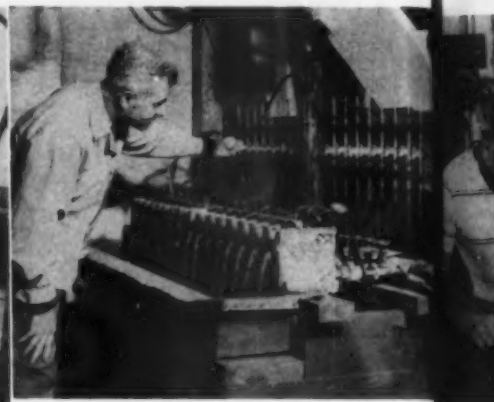
While the purchasing agent cannot directly submit samples for testing, the producer of materials can and does. The roster of manufacturers who have participated in the tests reads like a "Who's Who" of primary materials producers.

There is something inspirational and fascinating about the whole testing venture. First of all, it gives

#### LABORATORY PROJECTS AND APPARATUS



Aspirator-type jet test



British impingement test

the lie to those who maintain that in a competitive system of free enterprise, the efforts at improving the end product are subsidiary to the emphasis of selling. Rather, it is evident that the sellers are fully aware that quality and adaptability of the product to its end use will finally dictate the sale of the product.

But whatever the deduction, the facts speak for themselves. Producers of primary materials have submitted thousands of samples of their products to be tested by the forces of nature. They have entrusted their products to test in a laboratory operated by a private enterprise, which itself has put its own products to test. The conditions of test are known to all. The results are open to all.

The original testing area at Kure Beach has been expanded by the construction of a new and enlarged laboratory at the nearby area of

Harbor Island. The new laboratory was recently dedicated, and those attending the dedication attested to the interest and widespread participation by industry in the testing project.

It was a meeting of steel producers, of aluminum and brass producers. Navy representatives were there, and also a representative of the Air Force.

Specimens long immersed in sea water were lifted to view and inspected. Thousands of metal plates of various composition, and some with various protective coatings, were viewed to disclose the differing degree with which the materials have withstood the effects of marine atmosphere.

Some of the fundamental findings of the studies were explained . . . first, that the effects of exposure to the sea can be tested only in the sea itself. A chemical solution identical to sea water does not have the same corrosive action of sea water with its myriads of live organisms.

This, of course, is a basic justification for the operation of a marine laboratory at the edge of the sea.

Another basic discovery is that it is not the sea alone which determines the extent of corrosion. The extent of exposure to spray and sun are determining factors. To fully test the effects of exposure, it is most effective to subject the test samples to the exact conditions which the materials will encounter in their ultimate use.

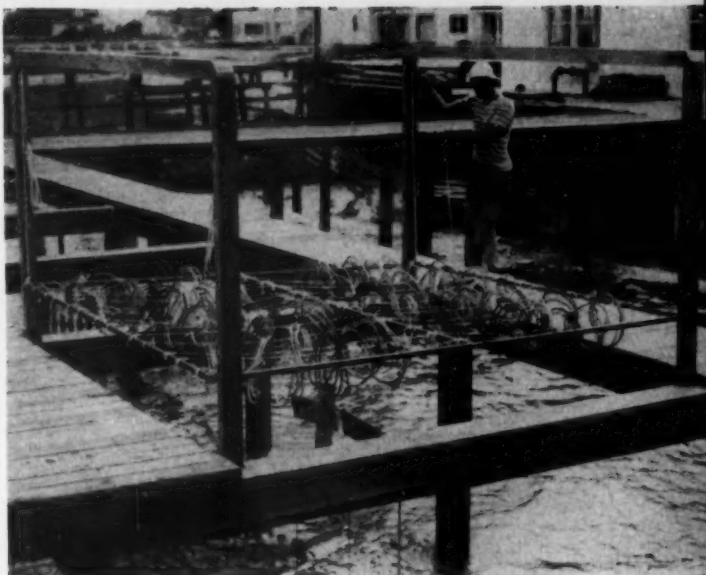
Tests are also being conducted to determine how harmful and destructive marine life can be controlled.

With the various basic principles

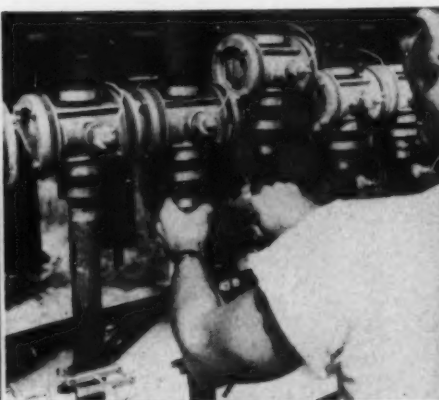
in mind, there arises another important factor—the problem of gaging a material to the number of years of life required of it. An ocean pier built to last 20 years might well be constructed of materials that might fall far short of a structure designed to withstand the wind and weather for 100 years.

One of the materials that has been found to be most resistant to corrosion is titanium, but here the factor of cost is an important determinant in the use of this material. The high cost of titanium suggests that its use to ward off corrosion is warranted only under circumstances where high material costs can be justified by the use and purpose of the structure in which it is to be incorporated.

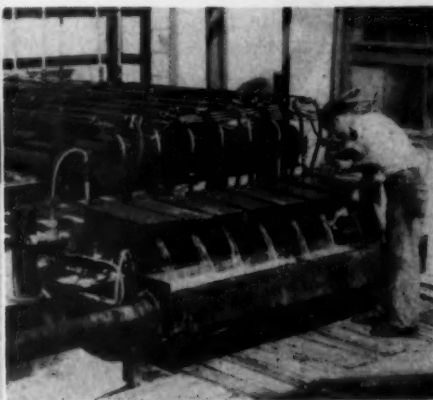
Specimens of rope will be tested periodically after varied durations of immersion.



Polarization test



Harrison Radiator test



Chlorination test

These findings, however general, are of great significance to industry, and from the viewpoint of the purchasing agent, the information being developed at the marine testing laboratory has a greater current value than ever before.

With practically all materials which are to be exposed to the sea being in short supply—steel, copper, nickel, the various steel alloying materials, materials going into protective coatings—it is more important than ever to use the most effective corrosion-resistant material available for a specific purpose.

And while the tests are not made at the direct instigation of the purchasing agent, the constant process of testing on a non-competitive basis, with all primary producers benefiting from the results, will mean better materials, more directly suited to the end product—which, of course, is the primary concern of the purchaser.

Monel rack with specimens showing marine growth.



# Purchase Budgets for Inventory Control

By Elroy A. Lyon

**B**UDGETARY practice in any phase of management has as its objective the planning, control, and balance of expenditures. It is primarily a fiscal device or program; in the case of purchased materials, a quantitative budget can readily be translated into financial terms. Budgeting is a mechanism of proved value in management. How and to what extent can it be advantageously applied to purchasing?

## Why Budget?

1. The first reason for having a materials or purchasing budget is a matter of planning. Procurement can and should be handled according to a plan, in respect to both quantities and timing. Normally that plan is determined by the operating schedule, translated into terms of a purchasing schedule.

2. A second reason for budgeting purchases is to achieve better control. By this means, expenditures for materials and supplies are correlated with the foreseeable need, not based on generalizations that have lost their significance, nor on variables. Avoidable losses may be incurred by buying either too much or too little of a given item; material costs are substantially increased by overstocking, and operating losses are sustained when materials are not available when needed.

3. Budgeting helps keep materials in balance, not only with requirements, but with each other. The balance tends to keep purchase expenditures constantly at work in

profitable operation, minimizes the expense of slow moving stocks and the danger of obsolescence, and avoids the delay in completion of end products through lack of one essential component.

4. Budgeting establishes standards of performance that encourage

6. Budgeting makes a matter of record of the judgment and recommendations of those who have a part in the compilation and approval of budgeted quantities. Consequently, it is a means of allocating responsibility for budget estimates and tends to make them more accurate and

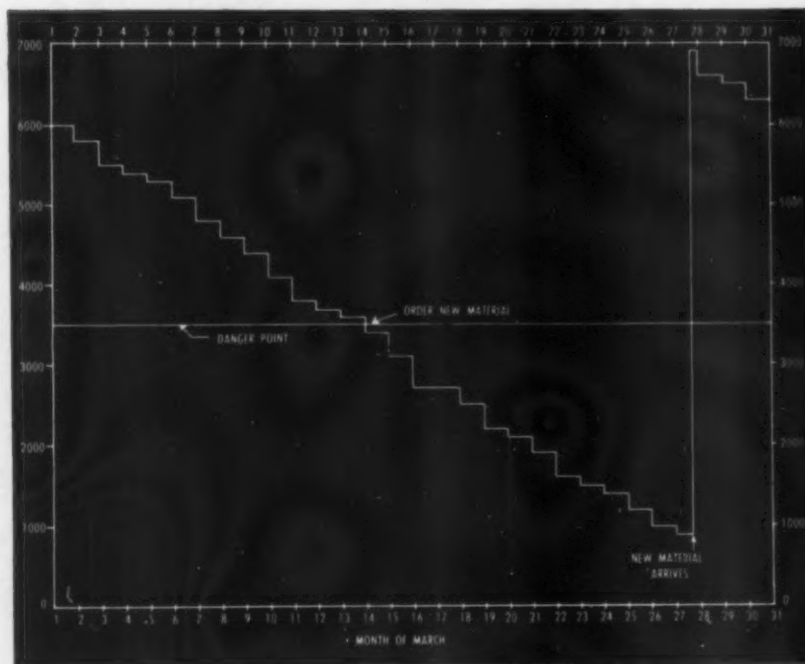


FIGURE 1. Simple inventory record in chart form.

efficient use and discourage carelessness and waste in the use of materials. Savings and efficiency are revealed quickly and dramatically when balanced against a budgeted estimate, while extravagance and inefficiency are just as apparent on the demerit side.

5. Budgeting of materials and expenditures permits the adequate and orderly planning of finances to meet the commitments.

more carefully considered.

The procedure for preparing a purchase budget generally involves six steps:

## Preparing a Budget

1. An estimate of sales is made for the period. This starts with an analysis of the sales in preceding periods. Sales records, accounts, and other vouchers furnish data for this analysis. The estimate requires

Mr. Lyon's paper is one of the prize winning entries in the Boffey Memorial Award contest sponsored by the Educational Committee of the National Association of Purchasing Agents for students of purchasing. Mr. Lyon competed as a student at the College of the Pacific.



MAKE A TON OF SHEET STEEL  
GO FARTHER

Specify—



... And  
"MAKE YOUR PRODUCT  
LAST LONGER"

Now, more than ever before, America must make full use of its steel-making capacity and conserve its natural resources. Now, more than ever, there is national significance in the phrases, "*Make a ton of sheet steel go farther*" and "*Make your product last longer.*"

These low-alloy, high-tensile steels do "make a ton of sheet steel go farther"—for their inherently higher strength is 50% greater than mild carbon steel. That means, in turn, that 25% less section can be used with safety, and where rigidity is important, this can usually be

compensated for through slight design change.

"Make your product last longer" is no idle claim. The much greater resistance of N-A-X HIGH-TENSILE to corrosion, abrasion, and fatigue assures longer lasting products even at reduced thickness.

Explore the potential economies to be derived from the use of low-alloy, high-strength steels—and then specify them. Their use can add materially to our national conservation program.

#### **GREAT LAKES STEEL CORPORATION**

N-A-X Alloy Division, Ecorse, Detroit 29, Michigan

**NATIONAL STEEL**



**CORPORATION**



the use of sales analysis comparisons under existing or future trade conditions. It is revised or modified in the light of purchasing possibilities, expense requirements, and profit potentialities. A continuing comparison of sales estimates with actual sales accounts permits corrections of the first estimate as it shows errors of judgment in setting up the sales program.

2. An estimate of turnover for the period is made. Inventory accounts and sales records of past periods are used in arriving at an average turnover for each line of goods or class of materials in comparable past periods. On the basis of past average turnover, probable turnover under existing or future trade conditions can be estimated.

3. Estimated average inventory for the coming period is computed for each item or line of finished stock to be sold in the period. For control purposes, these estimates are set up in schedules of finished stock inventory requirements.

4. A schedule of deliveries of finished stock is made. To be effective as a basis for management control, this estimate of deliveries should specify the amount of each line of goods that is to be placed in stock each week or each month of the period. If the period covers six months commencing January 1, the delivery quotas may be computed as follows:

- a. Estimated sales, at cost, for month of January
- b. Plus inventory expected on January 31
- c. Minus actual inventory on hand, December 31
- d. Equals quota of delivery into stock for January.

Similar calculations are made for each of the ensuing six months.

5. An estimate of purchases which will satisfy the schedule of finished goods deliveries is set up. This will show estimated orders to be placed each month, estimated deliveries to be made, and estimated disbursements to be made in settlement of vendors' claims.

6. The schedule of finished goods deliveries and the estimate of purchases are approved by the controlling executive authority with whom final approval rests.

### Factors of Inventory Control

Purchase budgets are inseparable from inventory control policies and problems. Any attempt to get a clear picture of the inventory control problem of an individual company must therefore start with a classification of the factors which

bear upon that problem. In so doing, we must recognize three things:

1. There are certain elements necessarily related to inventory control in *any* company.

2. Relative to each other, these factors vary in importance, not only as among different industries, but as among different companies in the same industry.

3. These variations depend upon the type of merchandise bought, the conditions under which it is supplied, and the conditions under which it is used.

In the first place, the elements which are common to inventory control in *all* companies must be reviewed:

- a. Stocks on hand.
- b. The time and extent of probable use.
- c. Storage cost.
- d. Obsolescence.
- e. Handling charges.

f. Transportation charges.

g. Investment costs.

h. Cost of buying.

i. Quantity price differentials.

j. Market conditions and price trends.

k. Time required for delivery.

To this list should be added three further considerations, particularly where purchases require large sums of money:

l. Financial resources of the buyer.

m. The possibility of an alternative use for the funds which might otherwise be invested in inventory.

n. The possibility of securing available substitute materials in place of more costly or hard-to-get items.

The importance of these various factors must be evaluated according to the type of industry within which the company is operating and to the

(Please turn to page 280)

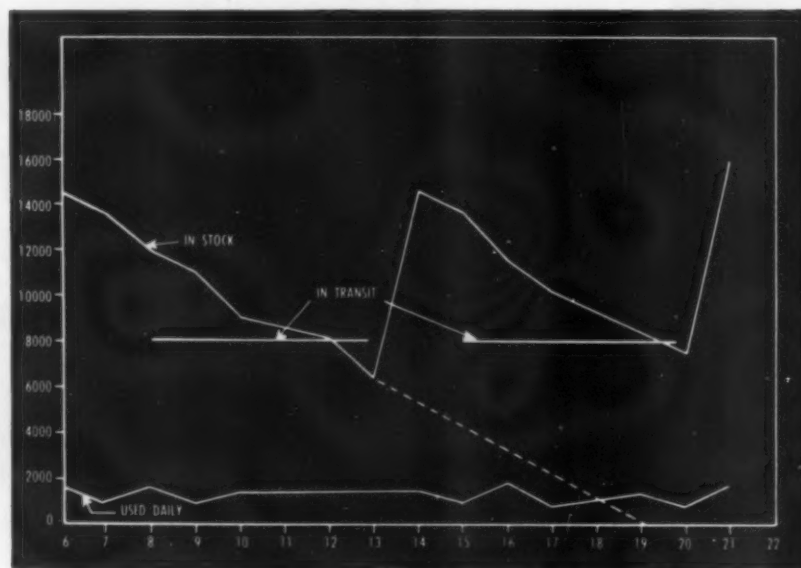


FIGURE 2. Inventory record showing usage and goods in transit.

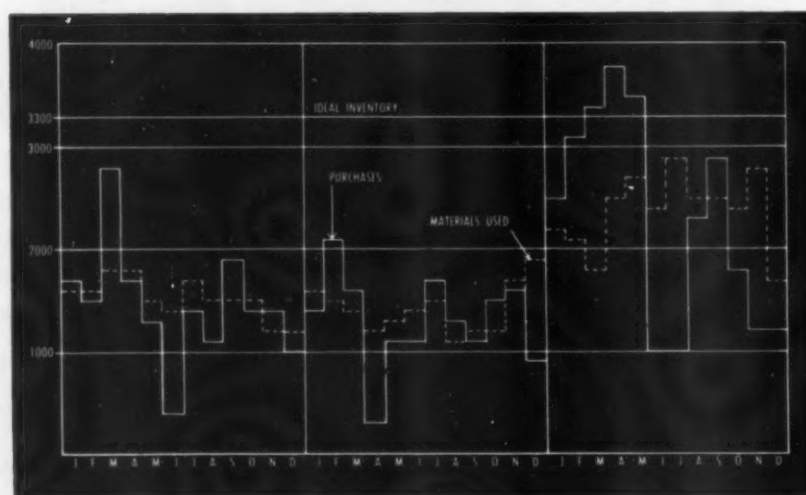
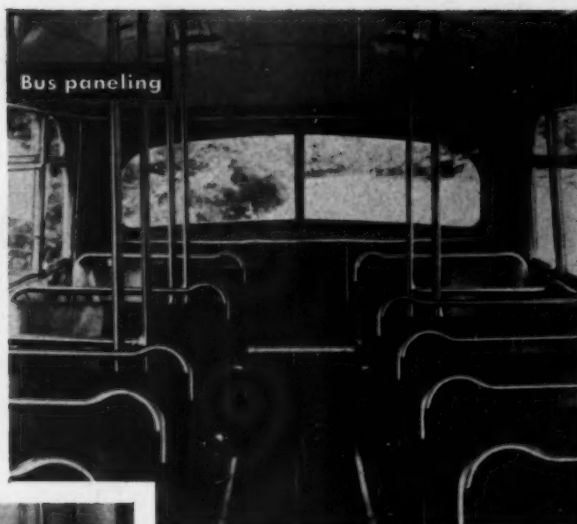


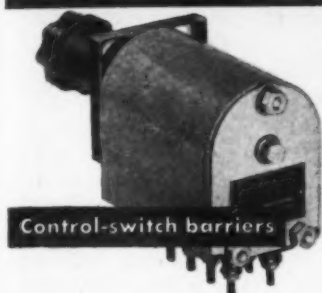
FIGURE 3. Purchases compared with usage to determine ideal inventory position.



Banking service counter



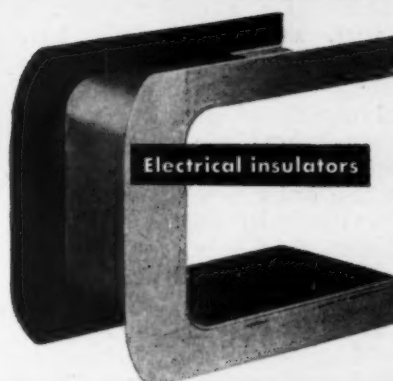
Bus paneling



Control-switch barriers



Window stools



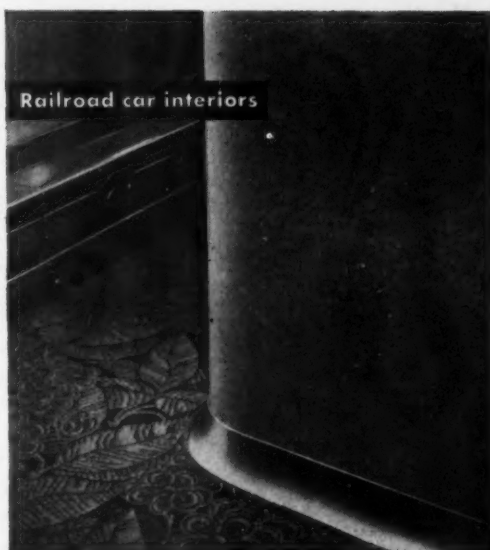
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## Validity of Verbal Purchase Contracts

By Leo T. Parker

RECENTLY a reader wrote, in part, as follows: "We have taken a great deal of interest in the monthly articles dealing with the legal aspects of purchasing. We are wondering if you have ever published a decision on the validity of a purchase order which is given verbally. Particular reference is made to orders given over the phone and specific purchase order numbers being assigned. Are such orders binding to both the buyer and the seller? Would appreciate your assistance in clarifying this question for us."

For the benefit of readers who desire similar legal information, the general answer is that the higher courts have very consistently held that verbal purchase orders and contracts including those given over the telephone are valid and enforceable, provided the purchaser convinces the jury the exact contents of the alleged contract and conversation.

Of course, the contract must comply with all other requirements of valid contracts. For instance, if the value of the merchandise exceeds \$2,500.00 the contract must be in writing, or if the value of the merchandise exceeds this amount the contract still may be valid if the purchaser either pays a down payment, or accepts delivery of all or part of the merchandise. Quite obviously, if the purchaser either makes a down payment or accepts delivery of all or part of the merchandise there can be no controversy between the buyer and seller as to whether a contract was made over the telephone. Hence, assuming that the value of the merchandise is less than \$2,500 such a contract is valid, provided both the buyer and seller admit details of the conversation which comprise a valid contract. On the other hand, if the seller denies validity of the contract, the purchaser must in some manner

convince the jury that actually a valid contract was made. This may be accomplished by having disinterested witnesses hear the original conversation, or recording it legally and with disinterested witnesses who can identify both the buyer and seller.

Hence, in view of the obstacles usually encountered when endeavoring to convince a jury that a valid contract was made over the telephone, it is advisable that purchasers have sellers confirm in writing all details of a verbal telephone conversation sale contract.

Legally, a valid contract is an agreement between two or more

part of the merchandise. Under any of these last mentioned circumstances an order or contract completed or made by telephone conversation is valid and enforceable.

An "expressed" contract is an agreement whose exact terms and conditions are thoroughly understood by both contracting parties. An "implied" contract is one where the court *presumes a promise*, or obligation, on the part of one party or both parties to the contract.

Obviously, if for any above mentioned reasons a contract is invalid or void, it may not be enforced by either the buyer or the seller and, therefore, since litigation of a con-



IN CASE OF DISAGREEMENT, YOU'LL HAVE TO  
CONVINCE A JURY OF WHAT WAS PROMISED

parties, firms, or corporations, by which each is *expressly* or *impliedly* obligated to do something, not prohibited by law, within a predetermined period. Ordinarily, valid contracts need not be in writing, excepting certain kinds of contracts that relate to real property, suretyship, and a few others that are required by state laws and the Statute of Frauds to be in writing.

Let us assume that the value of merchandise purchased over the telephone exceeds \$2,500.00, and the purchaser made a down payment, or accepted delivery of all or

tract of this nature always is unprofitable, it is important that readers shall have a dependable rule which distinguishes valid and invalid contracts. The higher courts have laid down the law that a contract is valid and enforceable.

(1) if one party submitted an offer which the other party *unconditionally* accepted in detail;

(2) if neither party deceived, misrepresented, or exerted unlawful influence to induce the other party to make the contract;

(3) if both parties agreed absolutely and positively to perform one

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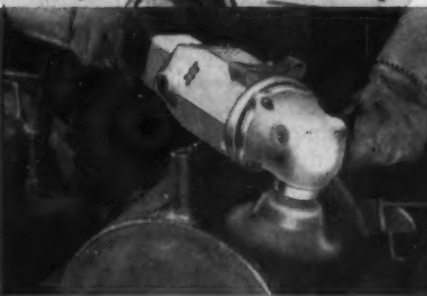
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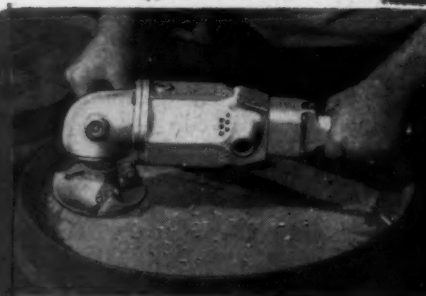
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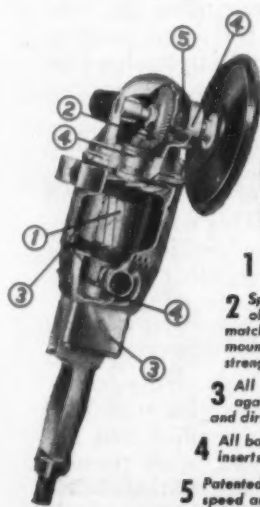
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or more definite acts;

(4) if both parties were of legal age, of sound mind and not unduly influenced when the contract was made;

(5) if both parties had legal authority to make the contract; and

(6) if the purpose of the contract is lawful and not against public policy.

to prove that they heard the seller make the alleged verbal guarantee. The higher court approved the jury's verdict, saying:

"The conflicting testimony raised a purely factual question which was determined in favor of the defendant (seller)."

Numerous higher courts hold that a jury must decide controver-

hold that all contracts of sale are void if made through error, violence, fraud or menace. Hence, where a purchaser proves that he did not receive *what he thought* he was purchasing, there is no valid contract and the purchaser may compel the seller to take back the merchandise or equipment and refund the purchase price.

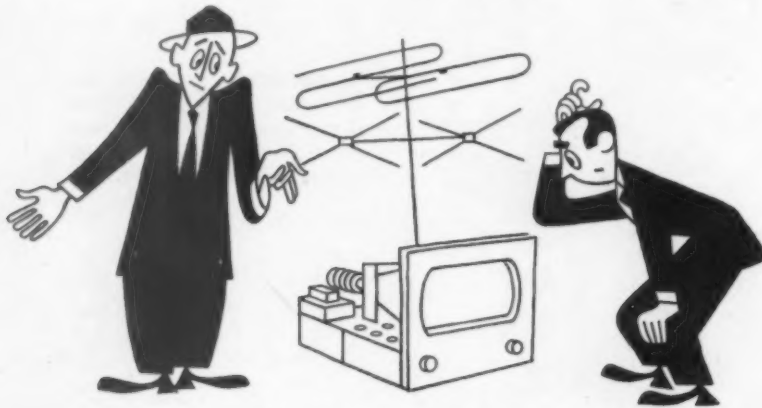
For example, in *Jake v. Blem Electrical Company*, 46 So. (2d) 631, the testimony showed facts, as follows: One Jake operates a restaurant and bar and the Blem Electrical Company is a retailer of television receivers and other appliances. The retailer had in its employ a salesman whose principal occupation was the "tile business". The salesman's name is Perino and he was learning to sell television sets. One day the salesman called on Jake and sold him a television set for the agreed price of \$1,095, plus an installation charge of \$200, taxes and freight \$48.85, or a total amount of \$1,343.85, to which was to be added finance or carrying charges. Jake made the agreed deposit of \$100, and obligated himself to pay, when the set was delivered, the further sum of \$350 cash, and to execute a note for the unpaid balance. A couple of disinterested witnesses were present when Jake placed the order with the salesman.

Also, later Jake had some telephone conversations with Perino's employer.

When the television set was delivered to Jake it was not in a cabinet, but was attached to a chassis and enclosed by a steel frame. Later the serviceman volunteered suggestions to Jake as to the manner in which a cabinet might be constructed to enclose the set. It was then that Jake realized that a misunderstanding may have occurred, and he immediately telephoned the seller stating that he was rescinding the contract because he had been laboring under the erroneous impression that a "beautiful cabinet" would enclose the set.

In subsequent litigation the higher court held that the seller must take back the television set, and refund Jake's payments. This court said:

"After carefully considering the record, our opinion is that there was never a meeting of the minds as between plaintiff (Jake) and defendant's representative, with respect to the sale and purchase of the television receiver. We are impressed by the fact that Jake testified that he, Clark, and Sciambra, were present during the entire negotiations leading up to the sale; that prior to the



**BUYER IS NOT AT FAULT IF THE SALESMAN  
DOESN'T KNOW EXACTLY WHAT HE IS SELLING**

Modern higher courts consistently hold that when either a buyer or seller alleges that the other party make a verbal contract or guarantee this party must prove his assertions by reliable witnesses, otherwise he cannot be awarded a favorable verdict.

For illustration, in *Mindlin v. Freedman*, 69 Atl. (2d) 177, it was shown that it was alleged that a purchaser entered into an oral contract for the purchase of 500 cases of salmon at \$20 a case. The purchaser made a down payment of \$1,000 and took a receipt from the seller. There was nothing in the receipt indicating when the salmon would be delivered.

In subsequent litigation the purchaser testified that the salmon was to be delivered on or before December 1, and when it was not delivered on this date he demanded the return of his down payment, which was refused. The purchaser contended that the seller breached the contract when it failed to deliver the salmon on the verbally promised date, and that he was entitled to recover from the seller the down payment, plus damages.

The court explained that Mindlin's (the purchaser's) contentions as to the law were correct, but the jury refused to hold the seller liable on the alleged verbal guarantee because, first, the seller denied that he had promised to make delivery on December 1, and, second, the purchaser did not introduce witnesses

sies between buyers and sellers where conflicting testimony is presented.

For example, in *Universal v. Emerson*, 179 Atl. 387, it was shown that a contract for purchase of merchandise was made partly by telephone, and later letters and telegrams passed between the buyer and seller.

In subsequent litigation the higher court held that the jury must decide the legal rights of the buyer and seller, especially since the buyer and seller presented conflicting testimony.

See also following cases which uphold this law: *Baltimore*, 163 Md. 596; *Rosenberg*, 152 N. E. 347; *Lipps*, 93 Neb. 469.

For comparison, see *Benton Gram Company*, 131 Kans. 735. Here a telephone conversation between a buyer and seller concerned the purchase of merchandise. The telephone conversation was immediately confirmed in a letter sent by the buyer to the seller. However, the seller did not reply to this letter.

#### **Indefinite Contract**

In subsequent litigation the higher court held that the jury must decide whether a valid contract was made, since ordinarily the seller should have acknowledged receiving the confirmation from the buyer. See also the following cases: *Heilman*, 90 N. Y. 672; *Morris*, 206 N.Y.S. 676; *Kansas*, 58 Pa. Sup. Ct. 419.

Modern higher courts consistently





## Why the sea is salty

IN Norse mythology, a poor man got a magic mill from the elves. With it he could grind whatever he wanted--food, clothing, furniture, and best of all, gold. Of course, the poor peasant's lot changed from poverty to riches.

An envious brother borrowed the mill. He commanded it to "grind herrings and broth and grind them good and fast." But having taken the mill in such haste, he didn't know the magic words to shut it off. He was almost drowned in broth when the brother came to the rescue.

Finally, the magic mill was stolen by a salt dealer, who put it on his ship. Safely at sea, the skipper demanded, "Grind salt and grind it good and fast." Alas, he hadn't learned the control words either. The mill ground salt endlessly, filling all his kegs

and his hold, covering the decks and at last sinking the ship. There at the bottom of the sea, so people say, the magic mill still grinds--and that's why the sea is salty.

From time immemorial, men have dreamed about magic mills and schemes to bring abundance and riches. Here in America, today, there are plans that are flooding us with superabundance of certain commodities. But what about the magic words to shut off the mill?

Isn't it time we see the truth in this ancient Norse myth, that "too much" is just as foolish as "too little?" We may well remember this first law of economics: In a free market, supply can adjust itself to demand--whether it be potatoes or steel--without sinking the ship. Here is a must job for all thinking Americans.



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sale, Perino (salesman) had been selling television receivers for only approximately two weeks, and had effected only one sale prior to the date on which the sale was made to plaintiff (Jake) . . . The testimony convinces us that (Jake) did not get delivery of what he intended to buy . . . Perino knew as little about the appearance of the set he sold to plaintiff as did plaintiff, who agreed to purchase it."

This court explained that sellers of merchandise may eliminate controversies of this nature by having a written contract signed by the purchaser, or by having the verbal contract confirmed in detail in writing.

### Telegram in Error

Of course, the legal rights and liabilities of both buyer and seller are definitely and finally established when a verbal agreement is reduced to a written contract. The same is true regarding correspondence, telegrams, etc. Moreover, while a telephone company never is liable for financial losses sustained by either a buyer or seller, a telegraph company may be under certain circumstances held liable for its negligence in incorrectly transmitting either a buyer's or seller's message.

For example, in *Allen v. Telegraph Company*, 39 S. E. (2d) 257, the testimony showed facts, as follows: A distributor received a cablegram from a brokerage firm of Ha-

About a week later the distributor received from the brokerage firm by mail a written contract covering the purchase which he had made, in which the higher price was stated.

The distributor sued the telegraph company for damages. In holding the latter liable in \$500 damages, the court said:

"The difference in the price paid and the price stated in the cablegram as delivered was, under the facts of this case, the true measure of damages."

### Books Are Good Evidence

Very frequently purchasers may win law suits by introduction of books before the court. The courts usually assume that books of a purchaser are correct unless proven erroneous by the seller.

Modern higher courts consistently hold that books or written records are good evidence and superior to verbal testimony, as to accounts.

For example, in *Hall v. Oregon Pulp Company*, 192 Pac. (2d) 981, one Hall sued a pulp company for money due on labor and merchandise. The latter defended the suit on the grounds that Hall verbally agreed to perform the labor at less than the amount of his bill.

It is interesting to observe that Hall introduced before the court daily records and books he had kept which confirmed his verbal testimony. Therefore, the lower court

ginal book entries of each party are admissible.

On the other hand, although a purchaser keeps accurate books showing details of a telephone conversation, the introduction of these books usually will not be permitted, or will not have much weight as evidence in favor of the purchaser who contends that a valid contract was made on the telephone.

This is so because the higher courts hold that a written memorandum relating to a transaction, made by one party without the knowledge of the other, is not admissible in evidence, unless it was made contemporaneously with the transaction and even then it can be used only for the purpose of refreshing the memory of the witness making it, and as auxiliary to his testimony. Another important point of established law is, as follows:

"Entries in books of account setting forth the terms of special agreements are not admissible in evidence for the purpose of proving such agreements. This rule results from the reiterated doctrine that the use of books of account as evidence at all arises in the necessity of the case, and that where the fact to be proved is or should be evidenced by a formal writing, or is susceptible of proof by other proper evidence, the books are not to be resorted to."

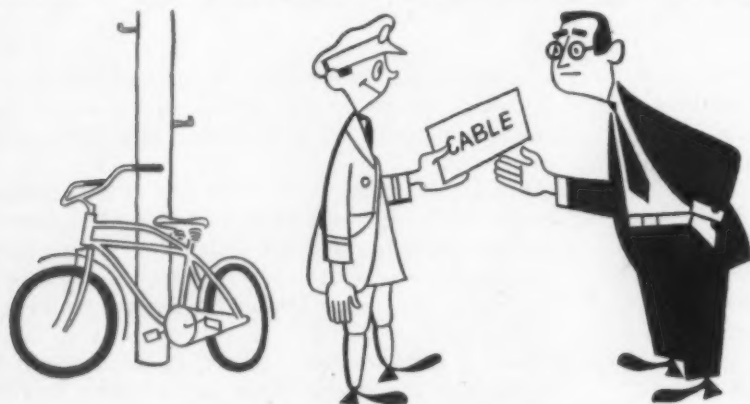
And again see 32 C.J.S., Evidence, 686, p. 567. Here it was said: "Books of account are not admissible to prove the terms or contents of a special agreement, or as evidence of a sum of money due under such an agreement."

### Memo Entries Not Admissible

For comparison, see *Discount v. Renderer*, 199 S. W. (2d) 56. Here one Renderer purchased merchandise for \$348.30 payable in 18 equal installments of \$19.35 each on the 16th day of each month. The note stated that if any of the installments be not paid when due, then *all* unpaid installments would immediately become due and payable.

Renderer did not pay the installment due on August 16 of \$19.35, nor the like installment due on September 16, and the seller took possession of the merchandise and sold it for \$200.

Renderer sued the seller for damages and testified that he had paid \$3 to the seller's collector who agreed that the payment of the installments due in August and September would be extended. Also, Renderer brought before the court books of the dealer which showed payment of the \$3 in controversy. This court said:



TELEGRAPH AND CABLE COMPANIES MAY BE  
LIABLE FOR ERRORS IN TRANSMISSION

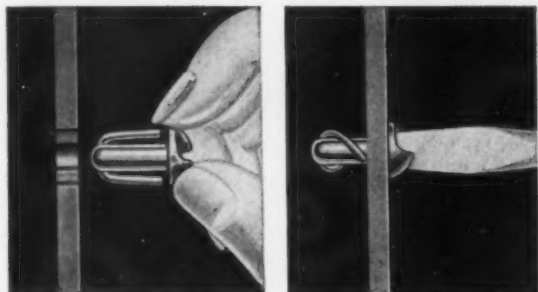
vana, Cuba, offering him 2,000 cases of a certain grade of canned pineapple at \$1.00 per case less than the actual price. In other words, the cablegram was incorrect.

The distributor immediately communicated by telephone with the largest buyers and during the day sold 2,000 cases of this grade of pineapple at a price on which a fair profit could have been realized at a cost price specified in the cablegram.

held in favor of Hall. The higher court approved the verdict, saying that Hall's books were good and convincing testimony.

Also, see *Nall v. Brennan*, 324 Mo. 565, 574, 23 S. W. (2d) 1053, 68 A.L.R. 684. This court held that where a recovery is sought for a balance due *on account*, and where the matter at issue and on trial is a proper and usual subject of *charge* on books of account, a ledger or ori-

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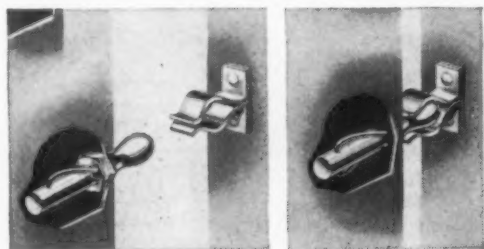
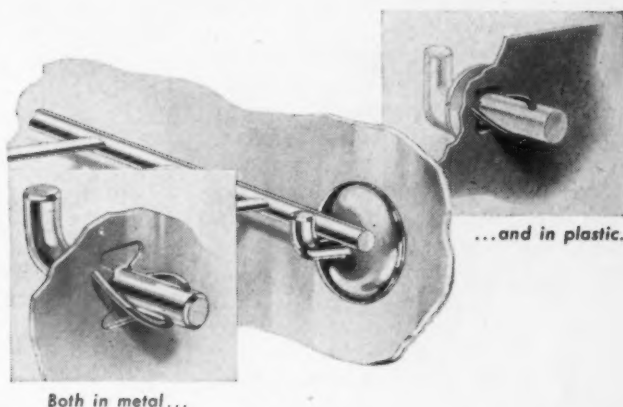


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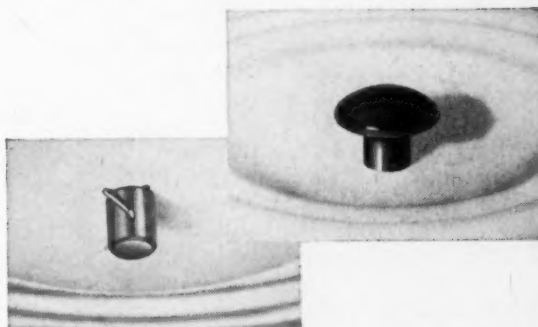


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"Entries in books of account setting forth the terms of special agreements are not admissible in evidence for the purpose of proving such agreements."

Hence, it is quite certain that although a purchaser keeps very accurate books and written records of telephone conversations, or other details of an alleged verbal purchase contract, yet the court will not permit the purchaser to introduce his books, as evidence in his favor. Therefore, the only practical plans by which a purchaser may verify and prove to a court that he made an enforceable contract with a seller over the telephone, or other verbal contract, is (1) through witnesses who can positively identify both the buyer and seller; (2) by witnesses who heard conversations between the buyer or seller which tend to verify that the alleged contract was made previously; or (3) by having the seller sign a confirmation to the alleged verbal contract.

#### **Must Be Clearly Proven**

All courts agree that the purchaser has the burden of proving the contents of his alleged verbal contract.

For example, in *Continental v. Baker*, 238 Ky. 265, the higher court held that one who alleges an oral contract must "clearly and convincingly establish in every particular" the alleged oral contract. This court held that when the evidence shows an indefinite, incomplete and conditional agreement, there is no binding contract.

In *Globe v. Eureka*, 151 So. 827, the higher court held that one who relies upon a verbal contract has the burden of proving his contentions in all and every detail.

For comparison, see *Robinson v. Franklin*, 35 S. W. (2d) 635. Here the higher court held an alleged verbal contract valid and enforceable where the evidence showed that all the necessary elements of a valid contract are present, and such were proved by the purchaser.

#### **Effect of Memorandums**

As above explained a purchaser who alleges a verbal contract may prove its existence by a written confirmation or memorandum signed by a seller. However, in other respects, particularly as to elimination of fraud of the seller, written memorandums have little or no legal effect.

For illustration, in *Bates v. Roy*, 31 N. E. (2d) 551, it was shown that a "confirmation slip" given to a purchaser by a seller contained a

clause that "it is agreed that" the seller has made no representation regarding the quality of the subject of this sale, other than to identify the subject of the sale and state the agreed price.

In subsequent litigation the higher court held that the purchaser was not precluded from introducing evidence to prove that the seller had practiced deceit and misrepresentation which induced him to enter into the sale contract.

This court explained further that when fraud enters into the making of a contract no confirmation, memorandum, contract, slip, agreement or clause signed by the purchaser will prevent the purchaser from proving that he was defrauded by the seller. This court said:

"Fraud which enters into the making of the contract cannot be excluded from the reach of the law by any form of phrase inserted in the contract itself."

And again see *Gran v. Saraf*, 263 Mass. 76. Here a purchaser filed suit and asked the court to rescind his purchase contract on the grounds

liabilities are affected by a written contract may introduce testimony of verbal promises, statements and agreements made by a seller to prove accident, mistake or fraud. This is so notwithstanding the written contract contains a clause to the contrary. See *National v. Checkason*, 264 Pac. 907.

Also, see *Huffman v. Ellis*, 90 N. W. 220. This court held that where a seller alleges that a memorandum contains the *full agreement*, the purchaser may introduce testimony as to verbal understandings which existed before the memorandum was issued.

And again in *Braude v. McDonnell*, 87 W. Va. 763, the higher court held that generally a written contract or memorandum must appear on its face to be incomplete before either the buyer or seller may introduce parol testimony to prove any alleged facts contrary to the written contract.

Another important point of law is that irrespective of a clause in a written contract to the effect that the written contract supersedes all



**ACCOUNT BOOKS ARE GOOD EVIDENCE ON SOME POINTS,  
BUT NOT IN RESPECT TO SPECIAL AGREEMENTS**

that he had been defrauded by the seller. The court held in favor of the purchaser and said:

"It is a fundamental principle of law that a party cannot contract against liability for his own fraud."

And again see *Noack v. Standard*, 183 N. E. 54. Here a contract was before the court which contained this clause: "No condition, agreements or representations, written or verbal, other than those printed herein, shall be binding."

It is interesting to observe that the higher court held that this clause could not protect the seller against fraudulent statements made by the seller.

According to a recent higher court a purchaser whose rights and

prior oral negotiations, yet either the buyer or seller may introduce before the court testimony of verbal agreements which do not contradict the written contract, but *add to it*. See *Saving v. Asburg*, 117 Cal. 97.

#### **Acknowledgment Not Acceptance**

A review of late and leading higher court decisions discloses that the presently established law is that a mere acknowledgment of an order ordinarily does not result in a valid or binding contract.

For example, in *Palmer*, 221 S. W. 353, it was shown that the Statute of Frauds provides that no contract for the sale of merchandise valued at over \$2,500 is binding un-



Herodotus *on  
freedom  
of  
discussion*

*It is impossible, if no more than one opinion is uttered, to make choice of the best: a man is forced then to follow whatever advice may have been given him; but if opposite speeches are delivered, then choice can be exercised. In like manner pure gold is not recognized by itself; but when we test it along with baser ore, we perceive which is the better.*

Container Corporation of America



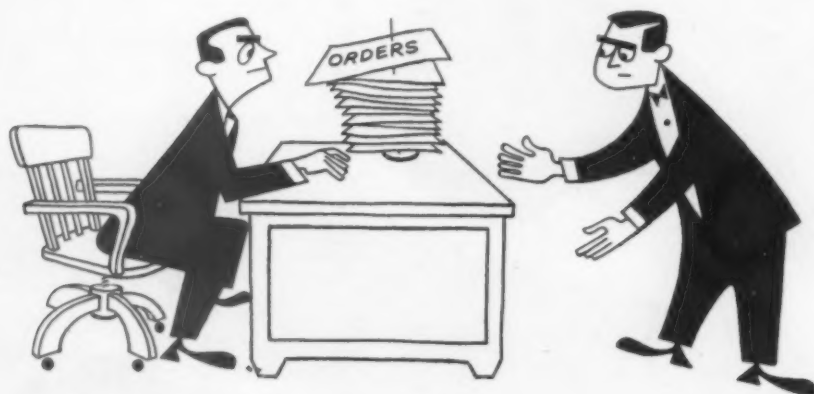
less (1) a contract of sale is signed by both the buyer and seller; or (2) the buyer accepts part of the order; or (3) the buyer makes a payment to the seller; or (4) the buyer signs a note or memorandum in writing which explains the transaction in detail.

A buyer gave a salesman an order for merchandise. The salesman's employer failed to definitely accept the order. In subsequent litigation the higher court held that no valid contract existed.

Also, see *Monier v. Appling Shoe Company*, 20 So. 978. This court held that a seller's acknowledgment of a purchaser's order with a statement that the order would receive "prompt attention" does not result in a valid sale contract. In this case the seller sent the buyer a post card on which was written: "Your order received and it will have our prompt attention."

The court held this post card was not a valid acceptance of the buyer's order, and that the purchaser could not recover damages from the seller for failure to ship the merchandise.

Again see *Courtney v. Curd*, 134 S. W. 146. Here a seller wrote a purchaser, as follows: "Your order of August 21 is at hand, and will receive our prompt attention. Thanking you for same and hoping to merit your future favors" etc., etc.



#### RECEIPT AND ACKNOWLEDGEMENT OF AN ORDER DOESN'T NECESSARILY OBLIGATE THE SELLER

The higher court held that this was not valid and legal acceptance of the purchaser's order, and hence no binding contract was made between the buyer and seller.

For comparison, see *Jen v. Mt. Hope Iron Company*, 53 Me. 20. Here the testimony showed that a buyer sent a seller an order for nails. The seller failed to acknowledge the order and the purchaser wrote a letter asking when the shipment would

be made. The seller answered stating: "It will not be possible to get your order out this month, but we will do our best to satisfy you and your order will receive our attention when we get to it."

The seller failed to make the shipment and the purchaser sued for damages. The higher court held the seller not liable because no valid contract existed.

For further comparison, see *Crane v. Barron*, 100 N.Y.S. 937. In this case a seller wrote to a purchaser acknowledging the order for lumber and stating further: "We have sent your order to the mill, with instruction to commence cutting at once. The lumber will be shipped via rail, unless you otherwise order."

The higher court held that a valid contract was made between the buyer and seller, since the above was a valid and binding acceptance of the purchaser's order.

And again in *Littlejohn v. Bill*, 169 N. Y. 720, it was shown that a manufacturer sent a purchaser a letter accepting an order. Another sentence in the letter stated: "We agree to have these goods ready in time for shipment."

The higher court held that the manufacturer must pay the purchaser damages for failure to ship the goods, as agreed. This court explained that the manufacturer's

letter was a definite and positive promise that the purchaser's order would be filled.

#### Offer and Acceptance

Under all circumstances in order that a purchaser shall win a favorable verdict involving a verbal contract he must prove that either employee or the seller made an offer which the other unconditionally accepted.

For example, in *Finsky v. Ray Paper Company*, 86 N. E. (2d) 131, the testimony showed facts, as follows: A purchaser and the Ray Paper Company signed a written contract by the terms of which the purchaser took an option for seven days to purchase a stipulated number of paperboard cartons at a definite price. The cartons were at this time in storage in a warehouse. The option contract specified that the buyer would pay 20% of the contract price at once and that this amount would be held to pay for the final lot, and all other lots were to be shipped C. O. D. The purchaser exercised or "took up" the option by writing a letter to the manufacturer saying that he accepted the offer but that instead of paying 20% of the contract price at once the manufacturer could place the cartons in a warehouse and have the warehouseman issue its warehouse receipt in the name of the purchaser to cover each lot as same were re-packed to insure that the number of the cartons would agree with the quantity stipulated on the warehouse receipts. The purchaser agreed to pay the purchase price on delivery of warehouse receipts, in trust, within forty-eight hours, or return the warehouse receipts. The manufacturer failed to deliver the merchandise and the purchaser filed suit for damages alleging that the manufacturer had breached its contract. The higher court refused to hold the manufacturer liable saying:

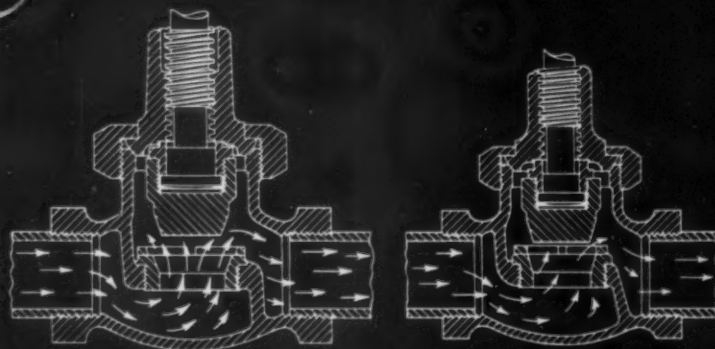
"It will be recalled that the option provided that upon the exercise thereof by plaintiff (purchaser) he was required to make an advance payment equal to 20% of the total purchase price, such payment 'to be held against the shipment of the final lot,' and that it also provided for C. O. D. payments by plaintiff for such quantities of the containers, as he 'may call for delivery'. . . It is readily apparent that plaintiff's letter of June 30 did not exercise the option in accordance with its terms but differed materially therefrom. It was therefore not an acceptance of the offer contained in the option but a counterproposal."

For comparison, see *American Company v. Prentiss*, 157 Ill. 507. The court said:

"It is undoubtedly the rule that, where one party makes a proposition to another, an assent to be valid must in every respect meet and correspond with the offer. . . The acceptance, however, need not be in writing, but it may be made orally, or be inferred from the conduct of the other party."



# POWELL gives you *Full Flow* in a Throttling Valve



COMPARE  
the flow characteristics of the new Powell "W.S." Valve (left) and the ordinary globe valve (right). Note the extra large opening through the seat (nominal pipe size) and the greatly increased lift of disc, when wide open.

This is actually a dual service valve in that it can be throttled to any desired degree, yet, when wide open, permits **FULL FLOW** through the body. Thus turbulence and pressure drop are reduced to a minimum—a triumph in engineering that exemplifies Powell's continual leadership in the field of industrial valve design.

Powell "W. S."  
Bronze Globe Valve  
Fig. 2608

Write for folder giving full description of the many advanced engineering features of this valve.

# POWELL

The WM. POWELL CO., 2525 Spring Grove Ave., P. O. Box 106, Station B, Cincinnati 22, Ohio

# New Products Ideas



If you want more information on New Products items, just list the item numbers in a letter to Purchasing Reader-Service Department on your company letterhead. This also applies to Catalogs and Bulletins described on Pages 19, 20, 22, 24 and 166. See Page 19.

## Acid-Proofer for Floors

Carboline Co., 7603 Forsyth Blvd., St. Louis 5, Mo., has a new material for "acid proofing" of concrete floors. It is a brush-on phenol formaldehyde coating, called Phenoline, which hardens at room temperature. Easy to apply, it is 2 to 9 times harder than conventional floor paints, the company states. It resists organic and inorganic acids, except nitric acid. It is not recommended for alkalis, but so far no solvent has been found to dissolve it. Colors are brick red, chrome green, iron yellow, gray, and black.

No. 101—For further information see Page 19

## Transformer Welder



Latest in the Wilson line of welders, made by Air Reduction Sales Company, 60 E. 42nd St., New York 17, N. Y., is the Airco 200 amp Model MCX transformer welder. The compact (12" x 17" x 23" high) unit will cover a wide range of applications from light duty sheet metal jobs to heavy duty industrial work. The MCX has a full 200

amp., 50% duty cycle, NEMA rating. Three current ranges selected by insulated tapering plug connectors and infinite hand crank adjustments within each range provide currents from 30 to 250 amps. This permits the use of 1/16" to 3/16" diameter electrodes. Silicone insulation provides a high margin of safety two ways: it operates safely at high temperatures without breaking down and is water repellent.

No. 102—For further information see Page 19

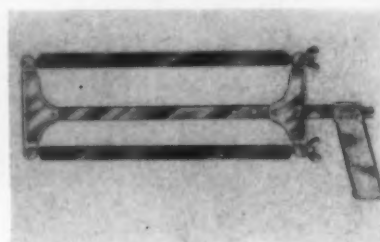
## Hoisting-Pulling Device



Through the use of link chain, Yale & Towne's latest model Pul-Lift, a portable device for hoisting and pulling, is suited to thousands of maintenance and production applications in a wide variety of industries. Work positioning, hoisting, stretching trolleys, telephone wire and even cables are just a few of the uses the company suggests. At any point of the lifting action, the load is safely supported by a positive, self-actuating load brake. Safety top and bottom hooks open slowly without fracture when overloaded. Available in 3/4, 1 1/2, and 3 ton capacities from Philadelphia Divn., Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa.

No. 103—For further information see Page 19

## Hack Saw Frame



E. C. Atkins and Company, 402 So. Illinois St., Indianapolis, Ind., has introduced its unique Duo-Kut hack saw frame. The frame holds two 10" or 12" blades of the same length but of different tooth points. The blades are held rigid and straight by wingnut tighteners on square tension studs. One side 1 5/8" under back, the other side 2 5/8" under back to cutting edge. Release button at back top side of the aluminum handle is pressed to turn frame to any of four cutting positions.

No. 104—For further information see Page 19

## Portable Nailer

The Heller Company, 2153 Superior Ave., Cleveland, O., claims its new foot-operated portable nailer, automatically fed, is five times faster than ordinary nailing. It drives through light metal, pressed wood, or into hard or soft wood. One touch of the pedal drives and countersinks the longest Heller Lock Nail. The feeding chamber holds over 100 Lock Nails that come together in one strip for fast loading. The nails come in many sizes, ranging from 3/8" to 13/16" long, and spear pointed. The nailer has a two-way adjustable table to handle a large variety of work.

No. 105—For further information see Page 19

(Please turn to page 132)



## Hounded by tubing problems?



**Bundyweld** Tubing, double-walled from a single strip. Exclusive, patented beveled edge affords smoother joint, absence of bead, less chance for any leakage.

**Nothing** will get you up a tree faster, competitively speaking, than a tubing part that can't hold its own in your product.

Like a coil that won't curl up and behave. Or a line that bursts under normal pressure. Or a unit that tires out after a short shimmy. If you're hounded by these or

other problems in your applications of small-diameter tubing, it will pay you well to check into Bundyweld, the multiple-wall type of Bundy® tubing.

Double-walled from a single strip, with exclusive beveled edge, Bundyweld has no peer in its field.

# Bundy Tubing Company

DETROIT 14, MICHIGAN

World's largest producer of small-diameter tubing  
AFFILIATED PLANTS IN ENGLAND, FRANCE AND GERMANY



# Cleaning Costs Too High?



**SEND FOR  
THIS  
FREE BOOK**

It shows all models  
of General Electric  
heavy-duty clean-  
ing equipment.



## FOR DRY PICK-UP

This model can be used for  
general cleaning jobs as shown  
above.

## FOR WET PICK-UP

It also takes up suds and mop  
water, as after cleaning floors.

To meet today's high maintenance costs, General Electric engineers have designed a complete line of heavy-duty vacuum cleaning equipment for buildings, schools, hospitals, industrial plants.

This line includes heavy-duty cleaners of various sizes and capacities, hand cleaners, furnace cleaner, also tools and accessories of many types.

These modern tools are helping management reduce maintenance costs not only in routine cleaning but when used for dust control and for recovery of small debris.

Learn what modern cleaning equipment is best suited to your needs. We will gladly arrange for a survey of your cleaning requirements to be made without cost or obligation.

## Industrial Cleaners

**GENERAL ELECTRIC**

MAIL THIS COUPON TODAY.

GENERAL ELECTRIC COMPANY, Dept 22-1223  
1285 Boston Avenue, Bridgeport 2, Connecticut

Our most serious cleaning problem is .....

Without obligation, please send new catalogue of heavy-duty cleaning equipment.....

NAME .....

FIRM .....

ADDRESS .....

CITY ..... STATE .....

## Shop Boxes



Steel shop boxes for stockrooms, assembly lines, etc., made by Lyon Metal Products, Inc., Aurora, Ill., are said to have 15% to 25% more cubic capacity than wood boxes of equal outside dimensions. They are available in five different styles. Style RB is illustrated. The RB boxes can be stacked on the floor and used for regular bin type storage. Hopper end permits easy removal of contents. Front top rail is rounded for use as handle. Size: 10" wide, 20" long, 8" high. The boxes are fireproof, will not absorb oil or grease, will not rot, warp or splinter. Available with green finish or no finish.

No. 106—For further information see Page 19

## Air Line Respirator



American Optical Company's newest respirator is the air-supplied No. 2099 for use where contaminants are unusually heavy. It protects against dusts, fumes, vapors, mists, smokes and gases. No filters or cartridges are necessary because a continuous flow of fresh air is directed through the hose. Features include the use of AO's popular R2000 respirator facepiece, a 2½ foot flexible, non-kinking, rubber breathing tube plus a 12½ to 50 foot length of 5/16" diameter air hose. Hose is resistant to oil, grease or gasoline penetration. Air flow is (Please turn to page 134)

# Not One Cent for Maintenance IN 14 YEARS OF SERVICE



Circular Saw Hardening Furnace after 14 years of service—center door partly open.

THAT'S THE RECORD of B&W Insulating Firebrick in Henry Disston and Sons, Inc. circular saw hardening furnace. During 14 years, this furnace handled hundreds of tons of high grade steel. *Despite this grueling punishment, the original walls and roof of B&W Insulating Firebrick are still giving excellent service.*

B&W IFB not only made possible continuously high production, but also assured better quality control . . . due to the quick response of this brick to temperature changes. And because B&W IFB have such a very high insulating value, the fuel savings over the 14 year period were appreciable.

Performance pays off. As a result of this performance, Disston has since lined ten more furnaces of different types with B&W IFB. If you, too, want to increase furnace operating efficiency and lower production costs, discuss your refractory problems with your local B&W representative.



One of the three new Bar Heating Furnaces.



New Bar Heating Furnace under construction with B&W Refractories.

## Furnace Specifications

Span of arch 13 ft. consisting of 9 in. K-26 IFB

Length of furnace 15 ft. 6 in.

Height of furnace from hearth to top of arch 2 ft. 6 in.

Side walls and doors 9 in. K-26 IFB



# BABCOCK & WILCOX

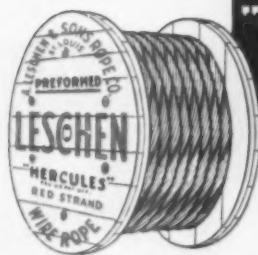
THE BABCOCK & WILCOX CO.  
REFRATORIES DIVISION  
GENERAL OFFICES: 85 LIBERTY ST., NEW YORK & N.Y.  
WORKS: AUGUSTA, GA.

R-357

B&W REFRACTORIES PRODUCTS—B&W 80 Firebrick • B&W Junior Firebrick • B&W 80 Glass Tank Blocks • B&W Insulating Firebrick  
B&W Refractory Castables, Plastics and Mortars • OTHER B&W PRODUCTS—Stationary & Marine Boilers and Component Equipment . . .  
Chemical Recovery Units . . . Seamless & Welded Tubes . . . Pulverizers . . . Fuel Burning Equipment . . . Pressure Vessels . . . Alloy Castings

**Yes,  
Just a Piece of Wire  
BUT...**

**upon its quality and fabrication depends the kind of wire rope service you will get.**



**"HERCULES"**  
RED-STRAND  
the **DEPENDABLE**  
WIRE ROPE  
for **TOUGH JOBS**

If this wire goes into a rope of 6 x 19 Seale Construction with a fiber core, it will be just one of 114. But if it is a "HERCULES" (Red-Strand) Wire Rope, *every* one of the 114 wires will have been rigidly tested to our exacting standards as to *all* essential properties. Furthermore, the rope will have been designed and fabricated according to the most advanced methods of manufacture.

Only by strict adherence to such principles, can the highest quality in wire rope be produced—*consistently*. It is never a matter of chance.

Because of long experience and the exacting care always used in making "HERCULES" (Red-Strand) Wire Rope, you can depend on it for safe and economical service. Made in a wide range of constructions—either Preformed or Non-Preformed, there is, *in this one grade*, a "right rope" for any heavy duty job.

MADE ONLY BY



*We Invite Your Inquiries*

**A. LESCHEN & SONS ROPE CO.**

ESTABLISHED 1857 5909 KENNERLY AVE. • ST. LOUIS, MO.

New York 6  
Chicago 7  
Birmingham 6

Houston 3  
Denver 2  
Los Angeles 21

San Francisco 7  
Portland 9  
Seattle 4

(Continued from page 132)

regulated by an adjustable valve that locks in position on the wearer's belt or clothing. AO is at Southbridge, Mass.

No. 107—For further information see Page 19

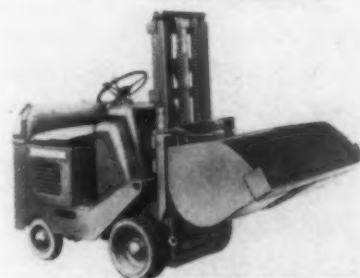
### Speed Reducers



Heavy duty Reducers have been added to the stock line of speed reducers made by Boston Gear Works, Quincy 71, Mass. Illustration shows the complete range of T Series, horizontal right angle drive Reducers, representative of the units. They are equipped with heavy gears, worm integral with shaft, housings of Boston Gear iron and rugged steel shafts. There are eight types, each in a range of speed ratios and horse-powers or load carrying capacities. Gear ratios run from 1 to 1 up to 4000 to 1. Output speeds, based on full load motor speeds, run from .45 to 588.23 rpm. Catalog No. 55 available.

No. 108—For further information see Page 19

### Hydraulic Scoop



Bulk materials such as coal, sand, cement, scrap, etc. can be quickly picked up, transported and dumped with this scoop developed by Towmotor Corporation, 1226 E. 152nd St., Cleveland 10, O. It is actuated by a powerful two-way hydraulic cylinder. With the lift truck's mast in vertical position, the scoop will tip 45° forward for dumping and 30° backward for carrying. The accessory is readily interchangeable with standard pallet forks. The only variable dimension on scoops of different capacities is the over-all width.

No. 109—For further information see Page 19

(Please turn to page 136)





Are you a Tough Customer ?

—Hard to Please on **GAUGE**

—Hard Boiled About **TEMPER**

—Fussy About **SURFACE**

...Then you'll like **CHASE BRASS SHEET**

Chase sheet or strip in brass, copper and bronze is uniform in gauge, temper and surface—it is quality metal with accurate widths, straight edges and smooth surfaces.

Heavy production schedules and copper shortages now make it impossible for us to accept all orders or to give our usual good service at all times but the quality of our products remains unchanged. It's good—as usual!

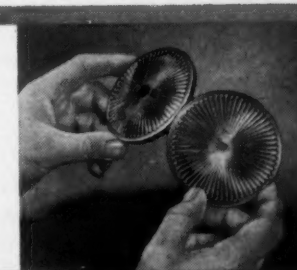
Chase sheet brass is carefully checked with both micrometers and an electronic X-ray eye.



Carefully regulated annealing procedures give Chase sheet the right temper and high degree of workability.



Clean flat surfaces with uniform rich colors—that's what you get with Chase sheet brass.



# Chase



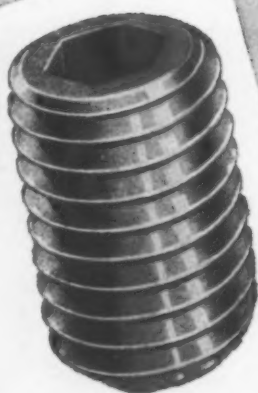
*the Nation's Headquarters for*  
**BRASS & COPPER**

WATERBURY 20 CONNECTICUT

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

THIS IS THE CHASE NETWORK . . . handiest way to buy brass

ALBANY! ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DALLAS DENVER! DETROIT HOUSTON! INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE  
MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER! ST. LOUIS SAN FRANCISCO SEATTLE WATERBURY (Sales Office Only)



## B-RIGHT-ON SOCKET SCREW PRODUCTS

Brighton Nu-Process Socket Screw Products are produced by new methods just recently developed to make better screws faster.

Alloy steel is cold worked to form a continuous compact structure, resulting in better screws. In addition much closer tolerances are maintained.

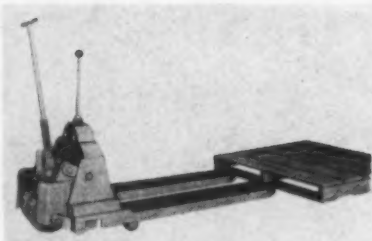
Better service to dealer and user results from the exceptionally high productivity of Brighton's processes.

Ask for Brighton Socket Screws from your industrial distributor—be sure of getting products of peak quality.

Our new catalog gives the facts. Write for your copy.

**BRIGHTON**  
Screw & Mfg. Co.  
18-29 Reading Road at Florence  
Cincinnati 2, Ohio

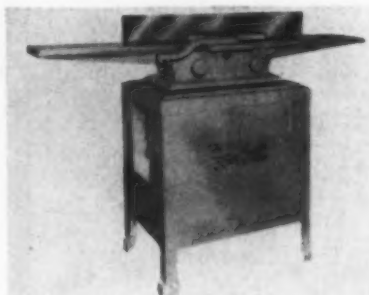
## Pallet Load-Lift



A new pallet load-lift described by Market Forge Company, Everett, Mass., as the only aluminum alloy pallet lift truck available, has been put on the market. It features special wheels that automatically retract when the forks are in a lowered position. The truck is said to turn easily in a very small area. It cannot be cornered and will lift wherever a man can stand. The rear wheels are 1" above the floor and do not damage bottom boards of the pallet. "Flaying handle" danger is eliminated because there is no connection between the pulling and lifting handle.

No. 110—For further information see Page 19

## Jointer



A 6" jointer with unusually long (60") tables is offered by Heston and Anderson, Fairfield, Iowa, for use in cabinet, pattern, and model shops, all kinds of woodworking plants, and maintenance and repair shops. Handwheels in front of the jointer control setting of each table. Tables are rolled up or down instantly and without injury. A balanced three-knife head, 2 7/8" diameter, is used. It operates at 6000 rpm, 18,000 cuts per minute. Extra long fence (37" x 4") assists the operator in holding close limits. Fence tilts 45° and may be set at a 7° angle across the cutter head.

No. 111—For further information see Page 19

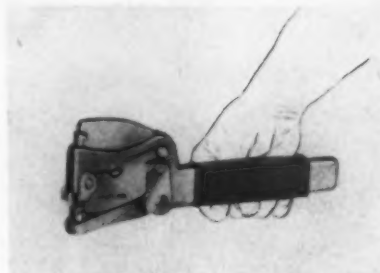
## Milling Machine

Brown & Sharpe's No. 0 Omni-versal milling machine, designed primarily for toolroom and experimental laboratory milling, has all the fundamental movements and adjustments common to the universal mill-

ing machine. In addition, it has an angular adjustment of the table in a vertical plane at right-angles to the entire knee assembly in the same spindle and a horizontal feed of the plane. Often work may be milled in a number of planes, or drilled, bored or reamed at many different angles without the use of special fixtures or attachments and without the need of relocating the work in the holding device. Further information available from Brown & Sharpe, Providence 1, R. I.

No. 112—For further information see Page 19

## Stapling Hammer



A new Bostitch stapling hammer, the Model H2B, for high speed tacking and light nailing jobs, features 20 improvements in design and construction. Included are: plating for rust resistance, new style driving lever for better balance, and new type pusher to eliminate jams. Only one hand and one blow are needed to drive the staples home. The tool uses staples of .050 x .019 wire, available in several leg lengths. Literature available. Bostitch is at 971 Mechanic St., Westerly, R. I.

No. 113—For further information see Page 19

## Air Conditioner

Westinghouse Electric Corporation's improved self-contained Unitaire air conditioner is designed to provide resort weather for homes, factories, offices, etc. But it can supply all-year-round conditioning by addition of either steam or water-heating coils and an outside air duct connection for ventilation air supply. The air conditioner is a factory-assembled packaged unit complete in every detail. It comes in three sizes: 2 hp, 3 hp, and 5 hp, with cooling capacities of 24,000, 36,000, and 60,000 Btu per hour respectively. The smallest unit covers a floor area 36" x 22 1/2" x 68 3/4" high. The largest has a floor area 44" x 22 1/2" x 77-1/16" high. Further information available from the company's Sturtevant Divn., 200 Readville St., Hyde Park, Boston, Mass.

No. 114—For further information see Page 19

(Please turn to page 138)

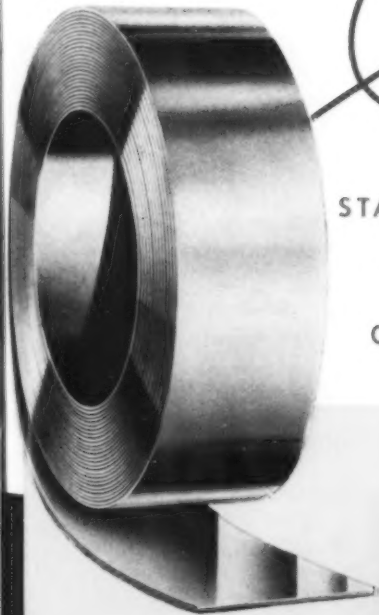


*Finer*  
**STRIP STEELS**  
**FOR YOU IN 1951!**

**OVER 50 YEARS OF**

*Specialization*

**IN STRIP STEELS**



STAINLESS

SPRING STEELS

CLAD METALS

ALLOYS

*Specialization*, in the fundamental Superior way, extends throughout our plant facilities, our research and our manufacturing techniques . . . to the sole end of producing finer strip steels for our customers. Our new plant installations, —including the Hot Mill shown above, cold rolling mills, and strip handling and storing facilities—signify faster, better service over a wider market range. • Let us detail the benefits to you of Superior specialization!

**Superior Steel**  
**CORPORATION**  
CARNEGIE, PENNSYLVANIA



## From Air Conditioning To Atomic Research THESE SMALL SWITCHES ARE DOING A BIG JOB



Series 240  
Rotary Switches

... now available in over 30 circuit variations for heater, motor and low-voltage A.C. electronic applications



Brand new only a few months ago, today in dozens of products, both civilian and defense, Series 240 Switches are proving the value of their exclusive combination of features:

- **Compactness** — unmatched by any comparable switch: base only 1½" high, 1¼" wide, 1" deep. Available in single hole mounting and bezel equipped models. Latter snaps into mounting hole for fast assembly with spring clips holding it firm.

- **Heat Resistance** — completely efficient operation with ambient temperatures up to 400° F.

- **Entirely Enclosed** — for safety, and protection of working parts.

- **High Overload Capacity** — ratings are conservative: 7½ A. 240 V.; 15 A. 120 V.; 25 A. 120-240 V.; 1 H.P., 120 V.; 2 H.P., 240 V. A.C. only. Underwriters' Laboratories Approved.

- **Peak Performance and Long Service Life** — thanks to ingeniously simple design, rugged construction, heavy silver contacts and long recognized "Diamond H" slow-break principle.

Write today for complete details on how Series 240 Switches will meet your needs.

**THE HART MANUFACTURING COMPANY**  
213 BARTHOLOMEW AVENUE, HARTFORD, CONNECTICUT



## around the world, it's **HOOVER BALLS** made of

CHROME STEEL • CARBON  
STEEL • STAINLESS STEEL  
BRASS • BRONZE AND  
MONEL METAL

"America's Foremost Ball Manufacturer"

**HOOVER BALL and BEARING CO.**  
Ann Arbor, Michigan

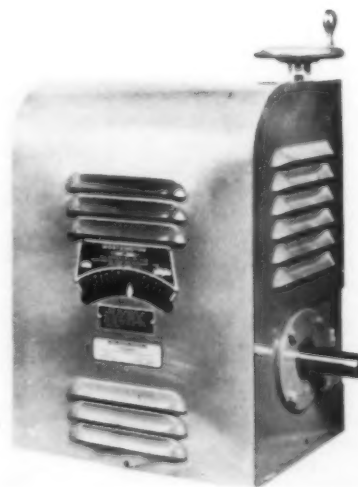
## Internal Grinder



South Bend Lathe Works says its new internal grinder meets the need for an attachment with sufficient power to maintain a more constant wheel speed under varying loads and to prevent stalling under comparatively heavy cuts. It is powered by a standard type, constant speed, continuous duty 1/6 hp, 3450 hpm a-c motor which is said to be superior to the universal type a-c, d-c motors ordinarily used. The motor is compound belted, through an intermediate shaft, to obtain a quill spindle speed of 30,000 rpm. Tests have shown that less than 1000 rpm drop in spindle speed occurs when taking cuts as heavy as .003" on a side in hardened steel.

No. 115—For further information see page 19

## Variable Speed Series



A new variable speed transmission series, incorporating the Worthington tandem belt design, has been introduced by Worthington Pump and Machinery Corp., Harrison, N. J. There are six models in the line, rated at 1, 3, 5, 7½, 10 and

(Please turn to page 142)

# CUT

metal cutting

# COSTS

with the **RIGHT** saw!

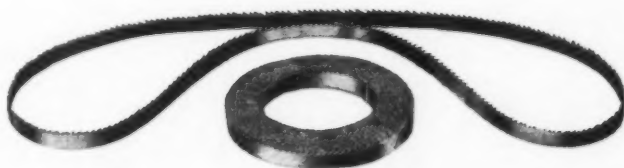
**HARD  
EDGE**  
Skip Tooth

**HARD  
EDGE**  
Flexible Back

**SPRING  
TEMPER**

# ATKINS

makes the **RIGHT** saw for every  
type of band saw job!



only **ATKINS** makes

*"Silver Steel"*

products

Different metals—different jobs—require different types of band saws. Keeping costs down and quality up demands the right type of saw for the job! Atkins makes the right type—exactly the right type! . . . And Atkins engineering specialists will gladly confer with you, without obligation, of course, regarding your own particular needs. Like scores of others—from the largest plants to the smallest shops—you'll find it to your decided advantage to take advantage of this service—and to specify Atkins "Silver Steel" products for every sawing job!



**E. C. ATKINS AND COMPANY**

Home Office and Factory:

402 So. Illinois St., Indianapolis 9, Indiana

Branch Factory: Portland, Oregon

Knife Factory: Lancaster, New York

Branch Offices: Atlanta • Chicago • Portland • New York

Mr. R. A. Preston, Chief Design Engineer  
Tecumseh Products Company, Tecumseh, Mich.



"Design simplicity is the biggest advantage we get by using standardized fractional-hp motors," says R. A. Preston, chief design engineer with the Tecumseh Products Company. "By adhering to these standards, we can often eliminate costly construction details. It's easier to select the exact motor we need, too, when we know *in advance* what the motor characteristics are."

Mr. H. S. Mulhollen, Vice President & General Sales Manager  
Essick Manufacturing Company, Los Angeles, Calif.



"Customer satisfaction is an asset we prize very highly," says H. S. Mulhollen, vice president and general sales manager of the Essick Manufacturing Company. "One way we keep our customers satisfied is to give our distributors a workable motor exchange and service plan, something we can do effectively by using standardized fractional-hp motors on our products."

# STANDARDIZATION can make



## STANDARDIZED FRACTIONAL HORSEPOWER MOTORS



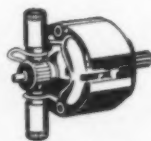
Gear-Motors



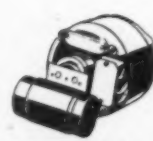
Home Laundry



Sump Pump



Series Motors



Shaft-Mounted Fan



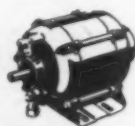
General Purpose



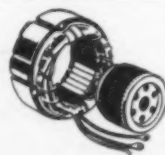
Jet Pump



Belted Fan



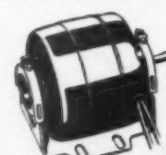
Gas Pump



Hermetic Refrigeration



Oil Burner



Unit-Bearing Fan

Want experienced application engineering help in using these and other G-E standardized motors? It's yours for the asking!



Mr. J. A. Fell, Director of Purchases  
Red Jacket Manufacturing Company, Danvers, Ia.



"Less detail work is what I like about using standardized fractional-hp motors" says J. A. Fell, director of purchases of the Red Jacket Manufacturing Company, manufacturers of pumps and water systems. "With motor characteristics and mounting dimensions now on a uniform basis, there is more opportunity to buy 'right out of the catalog.' Inventory problems are simpler and we get much better delivery."

Mr. J. Welker, Plant Manager  
Milton Roy Pump Company, Philadelphia, Pa.



"Flexibility is what we gain by using standardized fractional-hp gear motors," says J. Welker, plant manager of the Milton Roy Pump Company. "Two frame sizes take care of all our ratings which saves assembly time and simplifies purchasing. With our gear-motor supplier carrying standardized motor parts, we get prompt delivery."

# your job easier, too!

## Can standardization cut your motor costs?

It's surely worth your while to find out! And it's easy—just fill out the coupon and we'll furnish the facts you need to make a decision. For more details on what standardization of small motors covers, ask for Bulletin GES-3565. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.

☐ I'd like to talk to one of your fractional-horsepower motor specialists about the possibility of using standardized motors. My product is..... Its motor requirements are..... Other special requirements are.....

☐ Just send me a copy of your Bulletin GES-3565, for reference purposes.

NAME.....

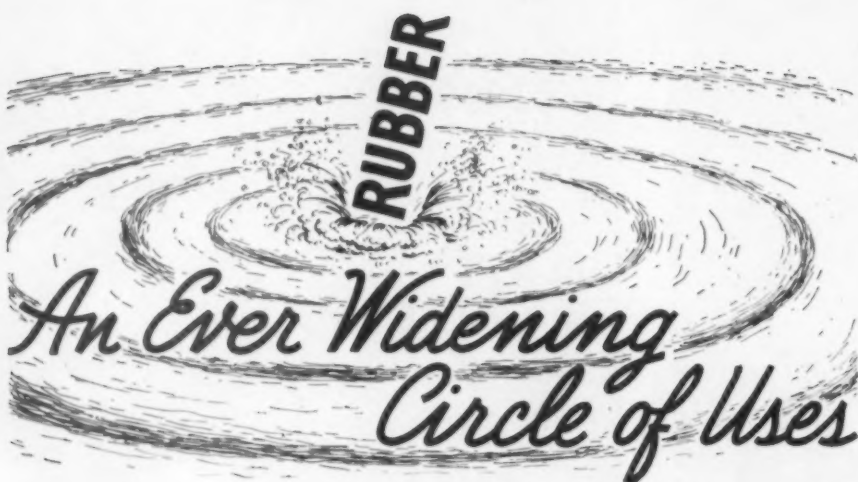
COMPANY.....

ADDRESS.....

CITY..... STATE.....

GENERAL  ELECTRIC

700-108



Rubber is playing an increasingly vital part throughout industry. Modern compounding has developed natural rubber and synthetic polymers into ideal materials for applications in which they could not have been considered a few years ago. Today, rubber molded parts with unusual properties and characteristics that overcome problem conditions are replacing standard materials that have inherent deficiencies for many applications.

ACUSHNET has every modern facility and technique for molding rubber parts and products with absolute precision.

**Acushnet**  
**PROCESS COMPANY**  
 New Bedford, Mass., U. S. A.

Send for Rubber Handbook  
 on your company letterhead



Address all communications to 770 Belleville Ave., New Bedford, Mass.

(Continued from page 138)

15 hp respectively. They offer variations of 16 to 1, 10 to 1, 9 to 1, 8 to 1, 7 to 1 and 6 to 1, respectively. At 1725 rpm input, the 1 hp unit offers a range of 215 to 3450 rpm; while the 15 hp unit will vary from 370 to 2220 rpm with an input speed of 1750 rpm. Worthington says the tandem belt design makes the drive specially suited to applications where space is limited. Bulletins available.

No. 116—For further information see Page 19

### Floor Maintenance Unit



A new unit which is vacuum cleaner, suction floor polisher and floor dryer in one is being marketed by Columbus-Combined, Inc., 333 E. 23rd St., New York 10, N. Y. Eight additional attachments take care of all "off the floor" vacuum cleaning and dusting on furniture, venetian blinds, etc. The unit can be used to mothproof closets, and will serve as a paint sprayer. Columbus says it is the only machine of its kind that is guaranteed for life. A larger unit is available for industrial purposes, and can be used on any surface but rugs.

No. 117—For further information see page 19

### Electric Saw



A new Stanley electric tool is the W65 lightweight 6" safety saw which combines high speed and dependability on all types of jobs. It has a universal type, d-c or a-c motor, 60 cycles or less, 5600 rpm, and

(Please turn to page 147)



Original Solvay Plant

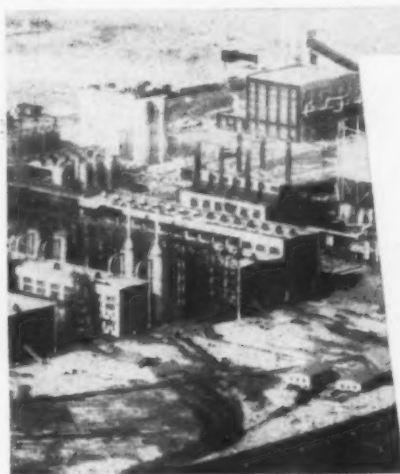
# 70 Years of *PROGRESS*

Progress can be measured in many ways...

Our progress, for example, might be measured by comparing our original soda ash plant to our five great plants that today have the world's greatest output of alkalis and associated chemicals. Or we might compare our early technical and research facilities with our present laboratories—the world's

largest and best equipped for alkali research.

But the way we like to measure our progress is by the steady year-by-year growth in the number of firms and individuals who continue to "specify Solvay." It is *their* feeling toward Solvay and Solvay Products that has made this progress possible.



Hopewell, Va.



Baton Rouge, La.



Detroit, Mich.

#### ALKALI PRODUCTS

Soda Ash • Caustic Soda

#### CHLORINE AND CHLORINATED PRODUCTS

Liquid Chlorine  
Monochlorobenzene  
Para-dichlorobenzene  
Ortho-dichlorobenzene

#### ORGANIC PRODUCTS

Methanol • Formaldehyde

#### AMMONIUM AND POTASSIUM PRODUCTS

Ammonium Chloride  
Ammonium Bicarbonate  
Caustic Potash  
Potassium Carbonate  
Sodium Nitrite

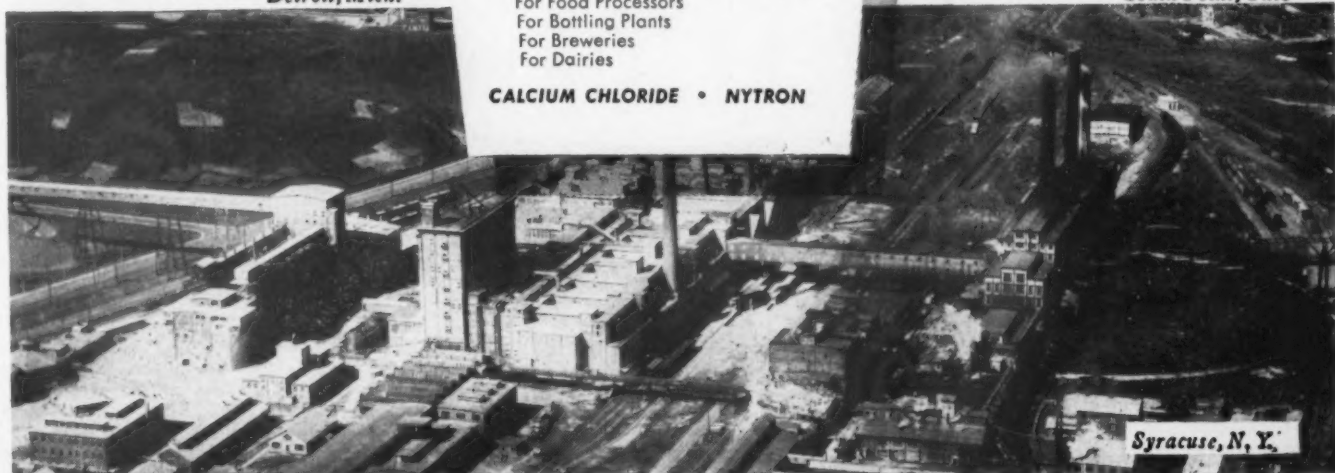
#### SPECIAL CLEANERS AND CLEANSERS

For Laundries  
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For Food Processors  
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CALCIUM CHLORIDE • NYTRON




South Point, Ohio



Syracuse, N. Y.

SOLVAY SALES DIVISION, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N. Y.





**What YOU can do  
to make the supply  
of Stainless Steel  
go further**



# 1

**Tell your supplier the exact purpose the Stainless Steel is intended for and how you plan to fabricate it. Then you will get the *right* steel for the job.**

# 2

**Minimize your scrap losses by ordering the sizes that will cut to best advantage.**

# 3

**Indicate, if possible, acceptable alternates in composition, gage, size and finish . . . it may speed up deliveries to you.**


**T**HESE SUGGESTIONS for conserving Stainless Steel are made to assist you during the difficult period we face today. The withdrawal of large tonnages of Stainless Steel—vital for rearmament—make it imperative that supplies of Stainless available for non-military use be made to go as far as possible. This can't be done without the close cooperation of everyone concerned—the steel producer, the steel supplier, and you, the steel user.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND • COLUMBIA STEEL COMPANY, SAN FRANCISCO  
NATIONAL TUBE COMPANY, PITTSBURGH • TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM • UNITED STATES STEEL COMPANY, PITTSBURGH  
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## U • S • S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS

**UNITED STATES STEEL**



**60 million**

**just isn't enough**

Sixty million is a lot of anything and that is the number of items Townsend can produce in one working day. Lately it just isn't enough to go around. We have strained every facility and every source of raw material to keep our production above average—but we still can't keep ahead of our orders.

So, if our delivery date for large and small cold-headed solid rivets and tubular rivets, special nails, fas-

teners, parts and other gadgets is longer than usual, please bear with us.

We believe our backlog of orders is in some measure caused by the savings we have created for our customers—so we intend to keep quality up to our rigid standards, no matter how busy we get.

Even if you must wait for delivery—you can count on Townsend quality control which has back of it 135 years of experience in wire drawing and cold-heading.

**Townsend**  
COMPANY • ESTABLISHED 1816

Plants—New Brighton, Pa. • Chicago 38, Ill.

Division Sales Offices—Philadelphia, Detroit, Chicago

Sales Offices in Principal Cities



(Continued from page 142)

features perfect balance in any position. Other advantages of the saw are the "Multi-Grip" handle, stippled for sure grip; a momentary contact switch, and an automatic telescoping safety guard with manual control, easily operated without danger to operator. Round arbor allows use of any standard blade. The saw bevels at any angle up to 45 degrees to a 1½" depth and cuts up to 2" deep at 90 degrees. Stanley is at New Britain, Conn.

No. 118—For further information see Page 19

### Tail Gate Loader



Latest in the line of hydraulic lifting equipment made by Stratton Equipment Company, Hanna Building, Cleveland, O., is a manually operated tail gate loader built expressly for use on pick-up trucks. Called the Stratton Hydro-Loader, Model TG, it will lift loads up to 650 lbs. from ground to truck level in less than a minute. Low price and ease of installation are listed among the features.

No. 119—For further information see Page 19

### Air Compressor

Worthington Pump and Machinery Corp. has brought out a new 105' portable air compressor built around its standard Blue Brute compressor, and powered either diesel or gasoline engine. It is 10" shorter, 4" lower and weighs 300 lbs. less than previous models. Among other features listed are: new zero pressure retractable third wheel; new underslung spring mounted undercarriage with heavy duty commercial 15" trailer tires; simple, retractable support leg; new style unit core radiator with pressure cap to prevent boiling and permit better operation of engine at higher temperatures and altitudes; relocation of instrument panel and battery box. Available from the company's Construction Equipment Division, Holyoke, Mass.

No. 120—For further information see Page 19

(Please turn to page 148)

## BUSINESS IN MOTION

### To our Colleagues in American Business...

This is Revere's Sesqui-Centennial Year. One hundred and fifty years of increasing business success is something out of the ordinary, even though there are a few companies in other industries as old or even older. This company dates back to 1801, the year Paul Revere started the first copper mill in this country, in Canton, Massachusetts. People usually think of him as a great patriot; he was also an artist and craftsman whose copper engravings and silverware are museum pieces today. In addition, he was a businessman, realizing that he could prosper only by offering better products and improved service to government, industry and the public. In labor relations he probably was a pioneer, because he paid somewhat better than going wages, in order to enlist to the full the skills his business required. Few men of his time could equal him in vision, inventiveness, and resourcefulness.

A spirit of inquiry, investigation, research, was one of his characteristics. Writing of his efforts to find how to work copper, he reports: "I determined if possible to find the Secret & have the pleasure to say, after a great many trials and considerable expense I gained it." His eldest son, Joseph Warren Revere, who succeeded him upon his death in 1818, went abroad in 1804 to increase his knowledge by visiting the European copper fabricators. This was in all probability the beginning of research by any copper and brass company in this country. In addition, the Revere mill continued to make independent investigations. As a result, Revere became known not only as the preferred American source of copper and copper alloys, but of information about them. This was so outstandingly the case that when one of Paul Revere's friends, Levi Hollingsworth, saw a need for a copper and brass mill in Baltimore he asked Revere for advice, and was given

it in full generosity. It is interesting to note that years later the Hollingsworth mill in Baltimore became the nucleus of the present Revere operations in that city.

When you consider Paul Revere's remarkable combination of art, skill, business acumen, recognition of the importance of research, it becomes possible to understand how a business so firmly founded could come down to today, larger than he ever imagined, and in proportion to the size of the country, just as important as it was in his own day. He was one of a number of men who put the United

States on the path to greatness, not only politically but industrially.

As we look about the present Revere organization we find close links with the past, complete contact with the present, and great future promise. We are not only in copper and its alloys, but have been in aluminum alloys since 1922. More recently, we began to make Revere Ware, copper-clad stainless steel cooking utensils, now serving in American homes everywhere.

Applied research, working as did Paul Revere but with greatly improved methods, continually uncovers new prospects for the future. In personnel, it has always been a Revere principle to give enthusiastic, aggressive and capable youth its chance as well as its training. Thus we are old and experienced, but ever new and imaginative. In this our Sesqui-Centennial Year we give tribute not only to those who have helped us grow since 1801, but also promise a continually increasing measure of service in the years to come.

And while we mark our 150th Anniversary we do not forget that the brass and copper industry, now including a number of venerable and honorable companies, joins with us in playing a vital part in American life. We are proud not only of ourselves, but of our entire industry.

### REVERE COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

★ ★ ★  
Executive Offices:

230 Park Avenue, New York 17, N. Y.



# Over Half of America's Top Rated Companies

USE  
**Speed Sweep**

THE BRUSH WITH THE STEEL BACK

Sweeps Cleaner,  
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Speed Sweep has become the No. 1 sweeping tool of American industry — used by over 50,000 firms. It is the only brush that is specially designed to do a thorough sweeping job with less effort. It is also the only brush that is constructed to outlast ordinary brushes. Whether you use a few or a lot of brushes, you'll find it pays to use Speed Sweep.

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**Milwaukee Dustless Brush Co.**

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Send complete facts about Speed Sweep.

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CITY \_\_\_\_\_

ZONE \_\_\_\_\_

STATE \_\_\_\_\_

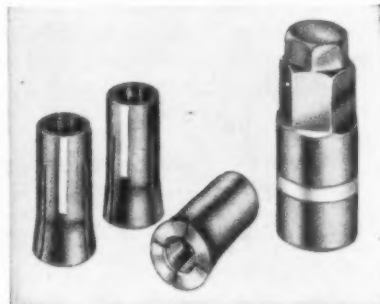
## Air Gage Plug



This contact gaging plug for Pratt & Whitney Air-O-Limit internal comparators permits air gaging of rough-surfaced bores with a high degree of accuracy previously not obtainable. The rate of air through the plug is controlled by carbide buttons mounted on spring leaves. The buttons are depressed by contact with the work, and impede the escape of air from small nozzles within the plug. The change in line pressure causes the indicator to show the exact variation from basic diameter in decimal terms. P&W says the contact plug is especially suited for diamond boring and reaming where finishes exceed 50 micro-inches, a degree of roughness which prevents the use of conventional air gaging plugs. P&W is at West Hartford 1, Conn.

No. 121—For further information see Page 19

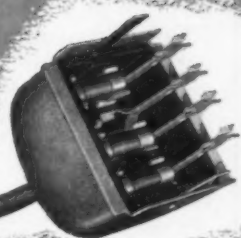
## Stud Pullers



Two series of threaded collet type stud removers and resettters offered by Snap-On Tools Corporation, Kenosha, Wis., feature great gripping power and ability to operate in restricted areas. The smaller size unit has 14 different collets available to handle studs from 1/4" to 5/8" in diameter in both fine and coarse thread sizes. The larger model has 6 collets available for 3/4" to 1" diameter studs in fine and coarse thread sizes. The powerful grip exerted by the tapered collet principle of the tool allows studs to be removed or reset if only two or three threads are exposed. Studs broken off below the thread portion may be threaded and then removed with these tools in the usual manner.

No. 122—For further information see Page 19  
(Please turn to page 150)

**For Greater  
Production  
Efficiency...**



## **POWER PLUG IN**

**The Midget Size Busduct, Now Available  
For Three Phase, Four Wire Service**

Ⓢ Power Plug, the midget size Busduct is the answer to today's demand for greater plant production efficiency. Available now for 4 wire 3 phase service, 3 wire 3 phase service and 2 wire, single phase.

Ⓢ Power Plug provides convenient plug-in outlets all along the line, permitting machines to be moved in and out of production lines without slowing down or delaying operations.

Ⓢ Power Plug provides 50 amp., main feeder capacity for  $\frac{1}{2}$  to 3 H.P. 240 volt motors, AC or DC, with conventional type fuses, and  $7\frac{1}{2}$  H.P. maximum with dual element fuses. In its new design

Ⓢ Power Plug also provides 208 volts single phase or three phase

for power to motors, and 120 volts for light where individual illumination on machines is desirable. It also provides 120 volts for small pump motors on return lubrication systems.

Underwriters' Laboratories approved, Ⓢ Power Plug is only  $3\frac{1}{2}$  inches wide and 2 inches deep in size. It is available in 5- and 10-foot sections with plug-in outlets every 20 inches; additional outlets on special order. Special lengths are also available for application on production benches and machines.

For further information on this new, convenient, flexible and efficient system of power distribution contact your nearest Ⓢ representative (he's listed in Sweet's) or write for Bulletin No. 704.



**Frank Adam Electric Co.**

ST. LOUIS 13, MISSOURI

*Makers of* BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE  
EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHETER

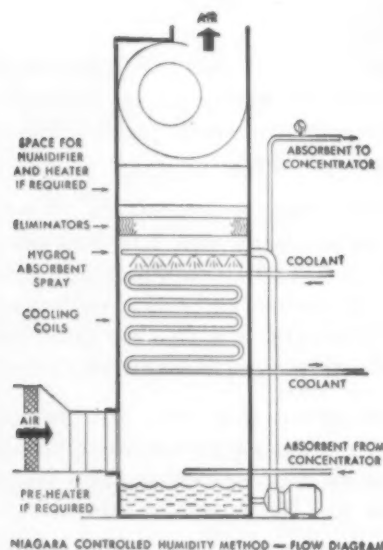


# New "Controlled Humidity" Method Gives a Better Solution to Air Conditioning Problems

**"Hygrol" Absorbent Liquid Dehumidifies Fresh Air Without Refrigeration**

NIAGARA Air Conditioners or Dehumidifiers using "Hygrol" liquid absorbent give precise control of air temperature and humidity... at lower operating cost, with large savings in space and with smaller and less expensive equipment, in many applications.

This method dehumidifies the air by passing it through a chamber in which "Hygrol" spray removes its moisture and produces a low dew point. The "Hygrol" solution resulting is continuously and automatically re-concentrated, providing always full capacity in



Write for Bulletin 112

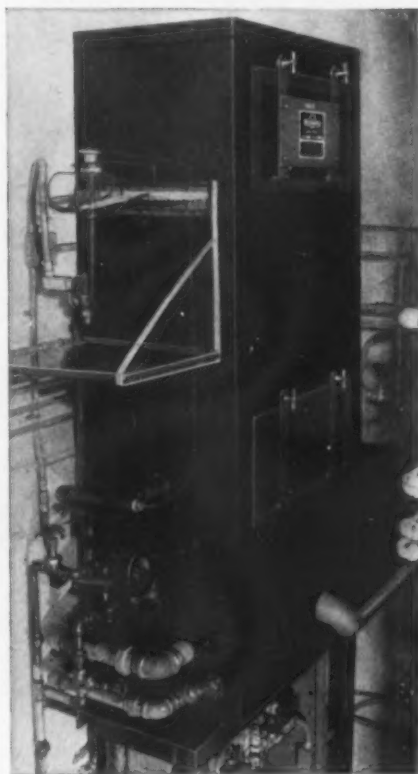
## NIAGARA BLOWER COMPANY

Over 35 Years Service in Industrial Air Engineering

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New York 17, N. Y.

Experienced District Engineers in all Principal Cities



air conditioning and assuring always a constant dehumidifying capacity and a trustworthy, constant condition for your material, apparatus, process or room to be conditioned.

"Hygrol" is a liquid, not a salt solution; it stays pure and non-corrosive; it does not cause maintenance or operating troubles in food plants or in chemical processes.

Investigate this new Niagara Method for "comfort" air conditioning as well as to protect quality in hygroscopic material, or processes or instruments, or to prevent condensation damage to metals, parts or products.

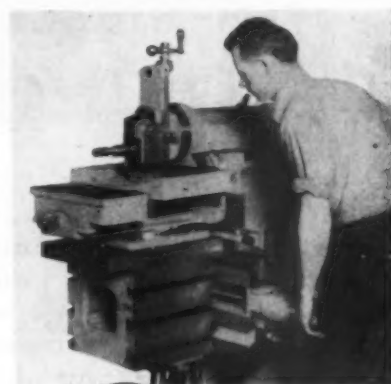
## Drilling Machine



A production increase of several hundred per cent over the old method of drilling was accomplished with a special drilling machine built by Precision Thread Engineering Co., 2540 Park Ave., Detroit 1, Mich. In this operation it drills six #50 and one #28 wire holes in Army-Navy aeronautical std. hex head bolts at the rate of 250 pieces per hour, or the equivalent of 1750 holes. The machine is equipped with seven Simplex automatic drilling units which have automatic forward and reverse drill spindle movement, and are made in progressive sizes for drills up to  $\frac{3}{8}$ ".

No. 123—For further information see Page 19

## Shaper



Cincinnati Shaper Company, Cincinnati 25, O., has brought out a low cost follower type shaper for duplicating contours on metal parts. The illustrated machine is used for automatically shaping contours on dies, clamps, cams and other parts without laying out the contour on the work and shaping to a line, as is normally done when shaping parts of this type. The follower equipment can be supplied on any stroke or size of Cincinnati shaper. The shaper is a standard machine except for the pad on the base, the masterform holder and a special table support post. It can be used for regular shaper work as well as automatic duplicating. Changeover is simple.

No. 124—For further information see Page 19  
(Please turn to page 152)

# PROVED IN PERFORMANCE

Grinnell-Saunders Valves with

CHEMICALLY INERT

**KEL-F\***  
**DIAPHRAGMS**

*Pat. App. For*



Grinnell-Saunders Diaphragm Valves with **KEL-F** Diaphragms are living up to every promise made for them! At the right are reports from typical users.

**KEL-F**'s resistance to chemical action, low cold flow, wide range of temperature application and exceptional flex life combine to make it the most important diaphragm development in years. **KEL-F** is chemically inert to all organic acids and alkalis in all concentrations. It withstands chlorinated aliphatic and aromatic compounds, concentrated nitric, chromic, hydrofluoric and sulphuric acids and most solvents which readily attack rubber and previous synthetic diaphragm materials.

While **KEL-F** is tough and flexible, it is not resilient. To provide resiliency for proper closure of the valve and to provide added support for the **KEL-F** diaphragm, it is backed with a rubber cushion. A free-floating method of attachment to the compressor assures an even closing pressure on the entire surface of the weir. A tube nut which floats as the rubber cushion presses down in closing the valve, eliminates excessive pressure on the diaphragm stud. The rubber cushions the closing force, thereby reducing wear and cutting action on the diaphragm. In accelerated tests, a 2-inch valve with a **KEL-F** diaphragm withstood over 80,000 closures, drop tight, against 80 pounds of air under water with no leakage and no visible signs of wear. Write for complete information.

## Typical performance reports . . .

1. Chlorine and HCl gas with small amounts of acetic acid and acetyl chloride at 302° F. for 900 hours. Very much superior to material it replaced.
2. Mixed aromatic and ketone solvents at 230° F. and 10 psi for three months. No sign of deterioration.
3. Chlorinated organic chemical at 158 to 194° F. and 30 to 40 psi for nine months. No failure, no shutdown, no replacement.
4. Chromyl chloride at ambient temperature and 15 psi. Diaphragm condition good at end of thirty days' test.
5. Liquid chloral saturated with HCl at 158° F. for 408 hours. Well satisfied — have placed orders for additional diaphragms.

\*"KEL-F" is the registered trade name for polytrifluorochlorethylene, an exceptionally stable thermoplastic. It is produced by the M. W. Kellogg Co.

# GRINNELL

WHENEVER PIPING IS INVOLVED



GRINNELL COMPANY, INC., Providence, R. I. Warehouses: Atlanta • Billings • Buffalo • Charlotte • Chicago  
Cleveland • Cranston • Fresno • Kansas City • Houston • Long Beach • Los Angeles • Milwaukee • Minneapolis • New York  
Oakland • Philadelphia • Pocatello • Sacramento • St. Louis • St. Paul • San Francisco • Seattle • Spokane

## Behind your television screen...



Rubber Television  
Anode Shield Manu-  
factured by Conti-  
nental for the  
Ucinite Company

## Continental Rubber gets into the act

In the unseen act behind your television screen, a small cup-shaped rubber shield plays an important role. This shield fits over the anode on the side of the tube. Its function is to "seal in" high voltage current and thus prevent surface discharges that cause picture distortion.

Ordinary rubber compounds, of course, can't fill the bill. This rubber part must have exceptional dielectric properties and unusual stability under sustained heat. It must resist the deteriorating effects of ozone created by electrical discharges. In addition, the rubber shield must be precision molded to insure proper seating against the side of the television tube.

Continental engineers, working closely with Ucinite Company engineers, have met these exacting requirements. This technical cooperation typifies the service in rubber offered by Continental.

When you need better engineered rubber parts, why not enlist the service of specialists in molded and extruded rubber?



### LET US SEND YOU THIS CATALOG

This new engineering catalog lists hundreds of standard grommets, bushings, rings and extruded shapes. It will be a valuable addition to your working file. Send for your copy today or . . .

See our Catalog in Sweet's File for Product Designers

MANUFACTURERS SINCE 1903

## CONTINENTAL RUBBER WORKS

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### BRANCHES

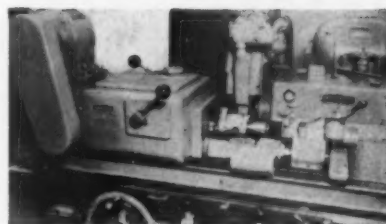
Baltimore, Md.  
Boston, Mass.  
Buffalo, N. Y.  
Chicago, Ill.  
Cincinnati, Ohio

Cleveland, Ohio  
Dayton, Ohio  
Detroit, Mich.  
Hartford, Conn.  
Indianapolis, Ind.

Kansas City, Mo.  
Los Angeles, Calif.  
Memphis, Tenn.  
New York, N. Y.  
Philadelphia, Pa.

Pittsburgh, Pa.  
Rochester, N. Y.  
St. Louis, Mo.  
San Francisco, Calif.  
Syracuse, N. Y.

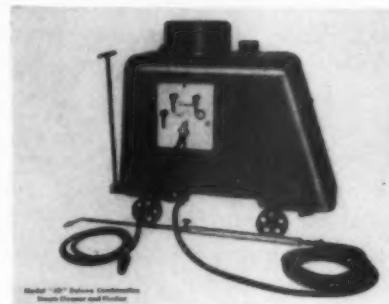
## Piston Grinder



Norton Company, Worcester, Mass., has brought out a new unit for grinding automotive or other types of pistons where a taper to the conventional relief form is required. It grinds the desired shape by holding the piston between centers, with the head end of the piston being carried in a dog or holder, and centered on the master cam spindle center. The bottom end of the piston is supported on a special footstock center carrying a spherical ball bearing. The footstock in which the special center seat does not rock by reason of being mounted on the rocking bar as in normal cam or shape grinding practice. It is mounted on a stationary member of the machine. Catalog 1839-1 gives further details.

No. 125—For further information see Page 19

## Steam Cleaner-Flusher



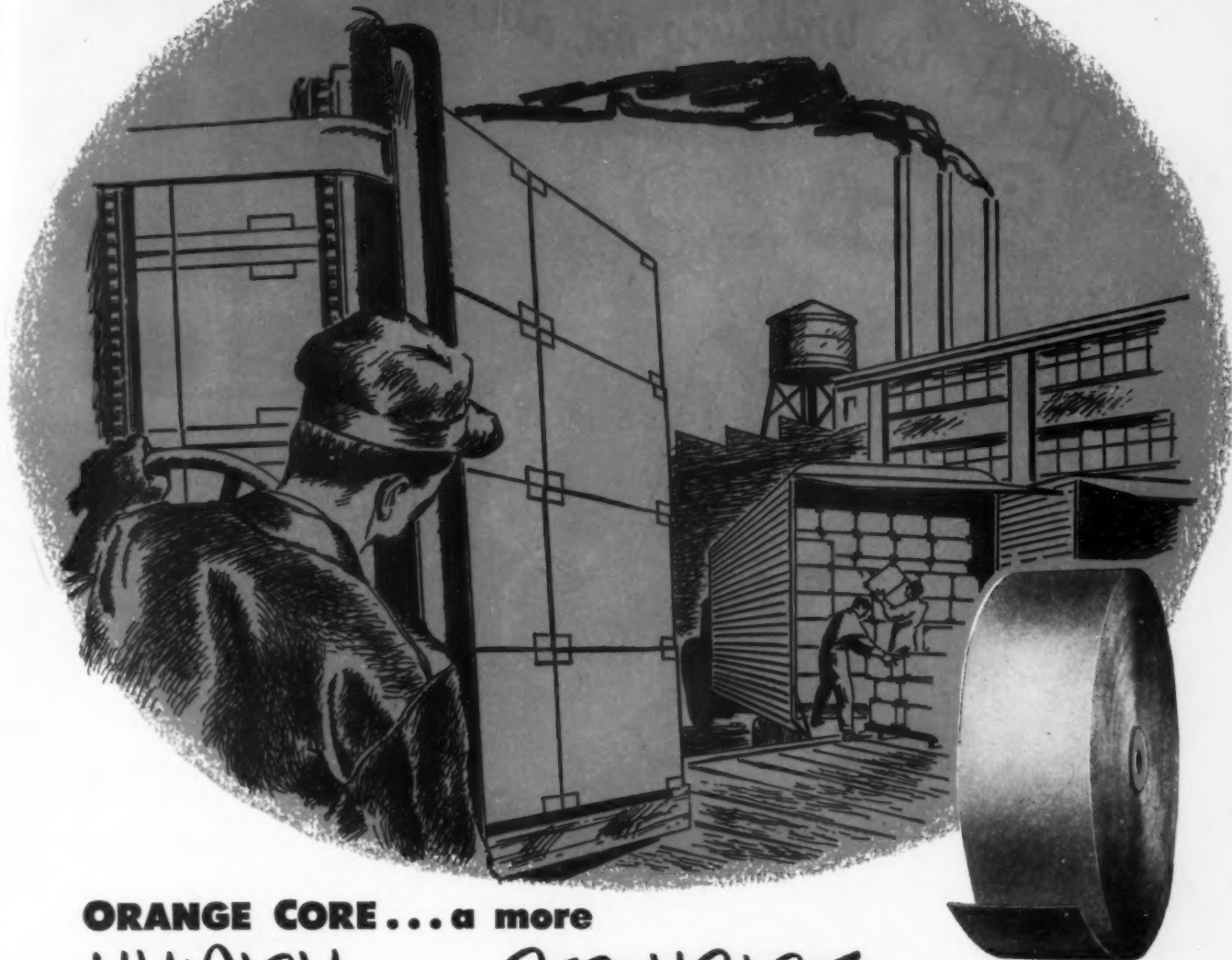
Homestead Valve Manufacturing Company's latest unit is a combination steam cleaner and automotive cooling system flusher known as the Model J0 Hypressure Jenny with built-in steam Thoro-Purge. The oil-fired, electric-motor-driven steam cleaner operates at 80 to 120 lbs pressure, and 90 gallons per hour water capacity, and is recommended for all extra-heavy-duty removal of grease and dirt. The complete cooling system cleaner is said to be the only one of its type that employs heat, chemicals, sudden but safe temperature changes, and strong air blast to thoroughly remove all grease, sludge and scale from the system. Catalog available. Homestead is located in Coraopolis, Pa.

No. 126—For further information see Page 19

(Please turn to page 154)



**ORANGE CORE MAKES YOUR SHIPPING DOLLARS GO FURTHER**



**ORANGE CORE . . . a more**  
**UNIFORM more DEPENDABLE gummed tape**

No tape—at any price—excels Orange Core in uniformity and dependability.

Every inch of Orange Core sticks to your cartons with exactly the *same* bulldog grip...gives you exactly the *same* stout, long-fiber kraft...lets your workers make exactly the *same* fast, reliable closure every time.

With Orange Core you need apply only the approved minimum amount of tape to *KNOW* your cartons are secure.

You see, the men who make Orange Core have a unique advantage: they control all ingredients that go

into the tape. Unlike some manufacturers, they make their own kraft and apply their own specially formulated adhesive—all under one roof, one laboratory control.

Small wonder that Orange Core is the world's largest selling gummed tape. Use it on your own cartons and see.

**Now Supple-ized for faster sealing**

*Supple-izing* (copyrighted) is an exclusive Hudson process to make Orange Core tape more flexible. The adhesive and kraft is treated to take out the stiffness and to prevent curling. *Supple-izing* makes Orange Core pliant and supple...easier and faster to handle.

GUMMED TAPE...



"The only closure that does so much for so little."

"The world's largest selling gummed tape"



**ORANGE CORE**

Copyright, H. P. & P. Corp.  
**GUMMED SEALING TAPE**

Available plain or printed, in choice of widths, weights, lengths and colors.

**HUDSON PULP & PAPER CORP., Dept. 2-B, 505 Park Avenue, New York 22, New York**

*The P.A. is walking on air..*



## **SIMONDS** ABRASIVE CO. grinding wheels

Production up...costs down...and rejects rare as a February heatwave. No wonder the P.A. is uplifted. And here's the reason. He collaborated with the production dept. in getting grinding wheels exactly suited to its jobs. They're Simonds Abrasive Company wheels... part of a complete line including grinding wheels, mounted wheels and points, segments and abrasive grains... all accurately specified, rigidly tested and scientifically produced under complete quality control by Simonds Abrasive Company, a major manufacturer of grinding wheels for over 50 years. Write for free data book.

SIMONDS ABRASIVE COMPANY, PHILADELPHIA 37, PA. DISTRIBUTORS IN PRINCIPAL CITIES

Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N. Y., Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.

### Reversible Fan



Reversibility of air flow without loss of efficiency, a problem in many industrial procedures, is accomplished with a new fan made by Hartzell Propeller Fan Company, Piqua, O. Tests conducted in accordance with specifications of the American Society of Heating and Ventilating Engineers show an air delivery of approximately 20,000 cu. ft. of air per minute at free air by a 36" single-propeller reversible fan, equipped with a 2 hp motor. Air delivery is identical when the fan is reversed. The alternate-direction efficiency is achieved by a specially designed propeller which resulted from years of testing by Hartzell.

No. 127—For further information see Page 19

### Thickness Gage



Rapid and careful checking of sheet and strip stock is important in avoiding smashed dies and needless scrap. Federal Products Corporation, 1144 Eddy St., Providence 1, R. I., has a portable thickness gage, Model 644, which performs these functions: 1. Checks incoming material to insure receipt of proper stock sizes; 2. Assures issuance of correct sheet thickness from stock room to manufacturing; 3. Measures stock before and after plating operation to determine thickness of plating. Hardened steel upper and

(Please turn to page 158)



## ***TRI* CLAD MOTORS**

REG. U.S. PAT. OFF.

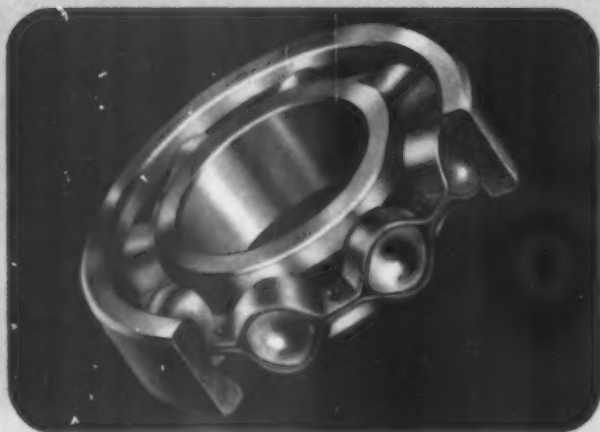
will run safely without relubrication for as long as any general-purpose motor you can buy—

**and** if the application makes relubrication a must, you can grease a ***TRI* CLAD** without halting production

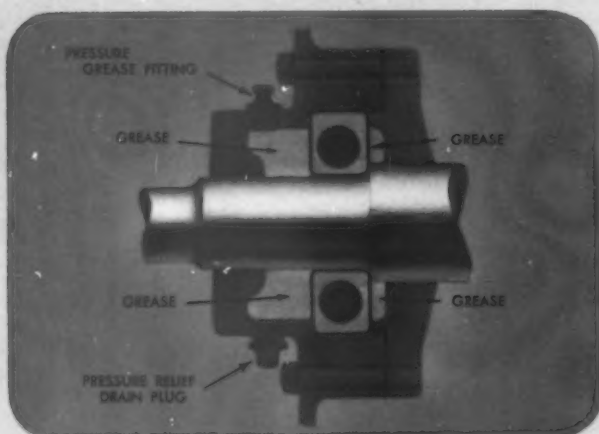
**GENERAL  ELECTRIC**

**HERE'S  
WHY**

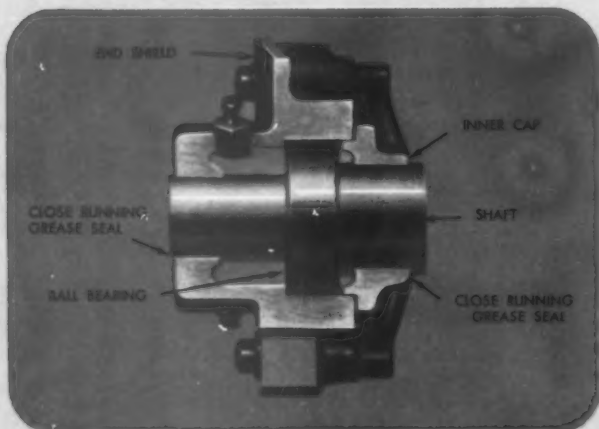




- ① **EXTRA BEARING PROTECTION** — Tri-Clad gives you extra bearing protection because heaviest standard-service bearings are carefully selected to withstand severe loads for long periods.



- ② **EXTRA GREASE** — Four times the ordinary amount of grease is packed into the large Tri-Clad grease reservoir. Since bearing life depends on grease, this means that Tri-Clad motors will run safely for years — for as long as any general-purpose motor you can buy.



- ③ **SEALED-IN BEARINGS** — Bearings and grease are completely sealed in a cast housing with long running seals for extra protection from dirt, dust, and lubricant leakage.

**TRI-CLAD** MOTORS will run safely without relubrication for as long as any general-purpose motor you can buy—

Tri-Clad extra lubrication "protection" can save you money because:

1. Tri-Clad's oversize grease reservoir and the heaviest standard-service bearings mean you do not have to bother with greasing between motor check-ups.

2. When relubrication is needed on those tough applications, you can grease a Tri-Clad without interrupting production-line operations.

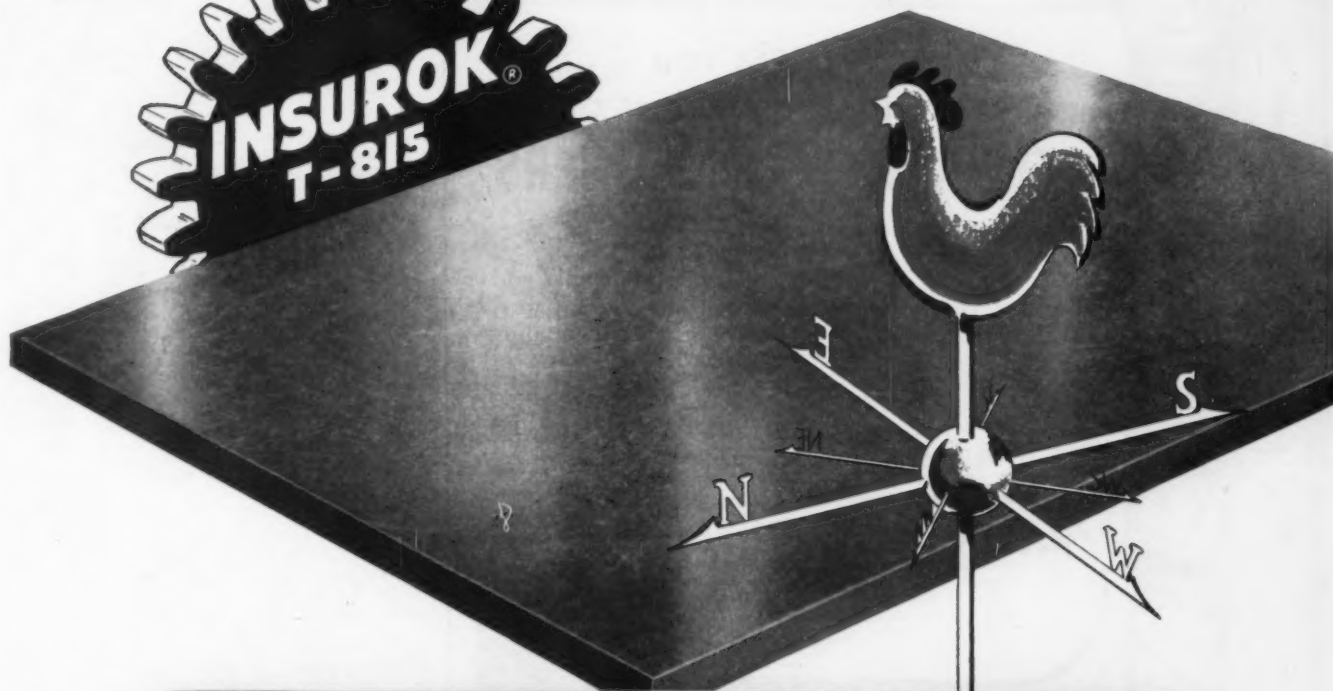
Tri-Clads are grease-gun easy to lubricate *on the job*. Moreover, a Tri-Clad motor will run safely where an ordinary motor would fail. Chances are you'll be spared the cost of a "special" motor.

**YOU BE THE JUDGE!** The best way to prove to yourself that Tri-Clad gives you the most for your motor dollar is to contact your local G-E office. Tri-Clad stocks are complete. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



- ④ **PRESSURE-RELIEF GREASING** — An efficient system of pressure-relief lubrication (with standard fittings) enables a Tri-Clad motor to be quickly and easily greased on the job when and if it's needed.

# A New REINFORCED LAMINATE For Gears and Mechanical Parts



*Provides* **UNIFORM STRENGTH  
IN ALL\* DIRECTIONS**

**Plus . . . Smooth Mechanical Finish . . . Good Electrical Properties**

Its reinforcement is different! . . . that's why this new material provides such a unique combination of properties.

Instead of woven fabric, new INSUROK T-815 is reinforced with unwoven cotton fibres, random-laid in the form of a mat. Thus, it exhibits high uniform strength—in the main direction, cross direction, and *all intermediate angles!* This property is valuable in gears and

other mechanical components, where teeth or other sections must have equal strength.

But Grade T-815 has more than uniform strength. Its electrical properties are good, and it machines well to smooth, clean surfaces, with finish and texture superior to any cotton fabric-base laminate made. Furthermore, T-815 can be punched—hot or cold, depending upon

the thickness—making it valuable for thin electrical parts requiring high strength.

Investigate new INSUROK T-815 for your product, today.

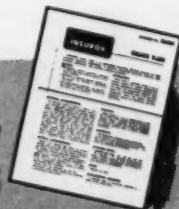
*\*All directions in the plane of the sheet*

*The* **RICHARDSON COMPANY**

FOUNDED 1858—LOCKLAND, OHIO

2791 Lake St., Melrose Park, Illinois (Chicago District)

**SEND** for new  
Data Sheet T-815



**SALES OFFICES:** CLEVELAND • DETROIT  
INDIANAPOLIS • LOCKLAND, OHIO • MILWAUKEE  
NEW BRUNSWICK, (N. J.) • NEW YORK  
PHILADELPHIA • ROCHESTER • ST. LOUIS



**WE OFFER YOU  
PROMPT PRODUCTION OF  
CLEVELAND CONTAINERS  
AT LOW COST**

Our many types of combination metal and paper cans, fibre and paper cans . . . paper, fibre and plastic tubes . . . cores . . . and mailing cases combine . . .

**STRENGTH • RIGIDITY • ATTRACTIVENESS**

Write or wire for complete information.

**The CLEVELAND CONTAINER Co.**  
 6201 BARBERTON AVE. CLEVELAND 3, OHIO  
 • All-Fibre Cans • Combination Metal and Paper Cans  
 • Spirally Wound Tubes and Cores for all Purposes

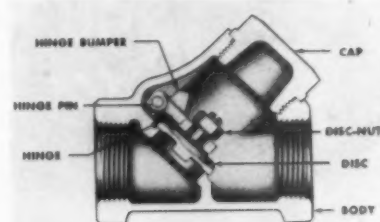
PLANTS AND SALES OFFICES: Cleveland, Detroit, Chicago, Plymouth, Wisc., Jamesburg, N. J., Ogdensburg, N. Y. • ABRASIVE DIVISION at Cleveland  
 SALES OFFICES: Grand Central Terminal Bldg., New York City; Washington Gas Light Bldg., Washington, D. C.; West Hartford, Conn.; Rochester, N. Y.  
 Cleveland Container Canada, Ltd., Toronto, Ontario • Offices in Toronto and Montreal

(Continued from page 154)

lower contact points quickly and accurately transfer measurement to dial indicator. Wide-faced, spring-loaded upper and lower anvils grip and hold the gage perpendicular to the stock surface.

No. 128—For further information see Page 19

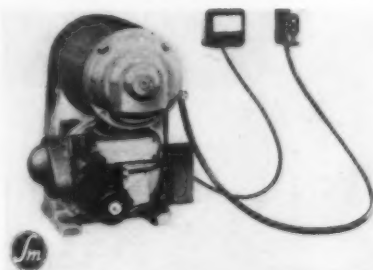
### Swing Check Valves



Crane Co., 836 S. Michigan Ave., Chicago, Ill., has announced a new line of Y-pattern brass swing check valves. They are of the regrinding type, in the 200 and 300-pound pressure classes. Screwed end patterns are available in sizes 1/4" to 3" inclusive; flanged end patterns in sizes 1" to 3" inclusive. Large cap opening on the same center line as the seat opening permits easy access for regrinding or replacement of parts. Easy contours in Y-pattern body offer minimum resistance to flow. The valves can be used on lines where flow is horizontal or upward.

No. 129—For further information see Page 19

### Remote Control for Drives



Sterling Electric Motors, Inc., Los Angeles 22, Calif., has a new electric remote control for its Speed-Trol (variable speed) electric power drives. It is a package unit, which may be mounted to any size Speed-Trol of current design, or supplied at the factory with new drives. The package includes a mounting bracket, reversing motor, chain and sprockets, friction clutch, chain guard, and remote "fast-slow" station. It is available with or without an electric remote speed indicator, which is a companion unit that can be mounted on any Speed-Trol by a mechanic.

No. 130—For further information see Page 19  
 (Please turn to page 160)

*Get*

**UNIFORM  
MACHINABILITY**


**FAST,  
LOW COST  
PRODUCTION**

*with*  
**Wyckoff**  
 COLD FINISHED  
**STEEL**  
 CARBON AND ALLOY

**FEWER  
OPERATIONS**

**PRECISION DIMENSIONS,  
ACCURATE SHAPES AND  
DEPENDABLE FINISH  
AUTOMATICALLY GIVE YOUR  
END-PRODUCTS THESE  
DESIRABLE CHARACTERISTICS**

**4** **CONVENIENT MILLS  
TO SERVE YOU!**



**WYCKOFF STEEL COMPANY**  
 FIRST NATIONAL BANK BUILDING • PITTSBURGH 30, PA.  
 3200 S. KEDZIE AVENUE • CHICAGO 23, ILLINOIS  
 Works at: Ambridge, Pa. • Chicago, Ill.  
 Newark, N.J. • Putnam, Conn.





the  
**DIRTIER**  
 the better  
 for LAN-O-KLEEN!

**DIRT** that's really hard to remove . . . that's deeply imbedded in workers' hands . . . that irritates cuts and abrasions—directly affects production figures! Think of the materials your present cleaner won't remove: graphite and metallic dust . . . heavy grime and lubricants . . . even common soil and office dust—no matter how hard you scrub!

**LAN-O-KLEEN**, the industrial soap powder, is designed for "heavy-duty" dirt removal. A fine corn meal base sponges out the pores . . . while thick suds sweep away surface dirt. As water is added, soothing Lanolin spreads over the skin, leaving hands fresh-feeling and clean as a whistle. Its soothing emollient action won't aggravate cuts and bruises. Further, Lan-O-Kleen and the sturdy Lan-O-Kleen dispenser are a dollar-saving combination—as a West representative can easily demonstrate.

**LAN-O-KLEEN** the industrial hand cleaner containing **LANOLIN**



Show me the  
 hand cleaner  
 that will  
 remove  
 stubborn dirt!

West Disinfecting Company, 42-16 West Street, Long Island City 1, N. Y.  
 (64 Branches in the U. S. and Canada)

Gentlemen: I'd like to have a local WEST representative come out and give me a demonstration of Lan-O-Kleen.

Mr. \_\_\_\_\_ Position \_\_\_\_\_

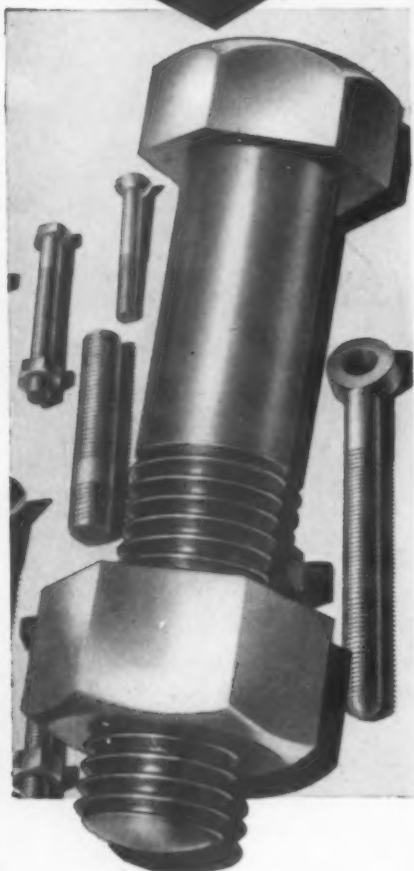
Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

2

First for  
**BOLTS  
NUTS  
STUDS**



- ★ Carbon Steel      ★ Stainless Steel
- ★ Heat-treated    ★ Silicon Bronze
- ★ Alloy Steels     ★ Naval Brass
- ★ Monel Metal

You can count on a uniform Class 3 Fit when you buy Pawtucket threaded fasteners. Accurately made in standard dimensions — or to your specifications.

**BETTER BOLTS SINCE 1882**

**Use Headed and Threaded Fasteners for Economy and Reliability**

# PAWTUCKET

"THE BOLT MAN"

**MANUFACTURING COMPANY**

327 Pine Street · Pawtucket, R. I.

THE PLACE TO SOLVE YOUR BOLT PROBLEMS

T.M. REG.

## Also Noted . . .

Electroshield metal, which improves the performance of electronic communication equipment by shielding it from outside interferences, has been produced by American Clad-metals Company, Carnegie, Pa. It is made in regular sheet sizes and gages.

No. 131—For further information see Page 19

Another Hanson-Van Winkle-Munning Co. (Matawan, N. J.) "widget" for electroplaters is the Fulflo air filter to remove rust, scale, dirt, free oil and moisture from compressed air lines. The filter and replacement cartridges are available from stock in 3/4" pipe size with mounting bracket.

No. 132—For further information see Page 19

A new silicone rubber compound developed by the chemical department of the General Electric Company, Pittsfield, Mass., permits rubber fabricators to mold silicone rubber parts more easily, and with highly improved mechanical and thermal properties. It is designated as 81223 compound.

No. 133—For further information see Page 19

Palmetto 1330 is a new packing prepared from chemically pure blue asbestos yarn, each strand of which is thoroughly impregnated with Teflon, giving it Teflon's resistance to acids, alkalis, corrosive chemicals and solvents, from —150F to 550F. Made by Greene, Tweed & Co., North Wales, Pa.

No. 134—For further information see page 19

Tagliabue Instruments Division, Weston Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J., says convenience is the outstanding feature of its Thermicator, a pocket-type thermometer. It can be used either as an armored or plain thermometer for temperatures between —30F and 120F.

No. 135—For further information see page 19

A liquid cleaner for use on acrylics such as lucite and plexiglas is made by Schwartz Chemical Company, Inc., 326 West 70th St., New York, N. Y. It is said to solve the problem of removing masking tape and other foreign matter from acrylics as well as ordinary glass.

No. 136—For further information see page 19

A new method of automatically cleaning and deodorizing toilet bowls combines the use of a float-type dispenser and a special formula. Proper amount of formula is automatically mixed with water, and scrubbing is eliminated. Distributed nationally by Ray Sanders Co., 220 Security Bldg., Pasadena 1, Calif.

No. 137—For further information see Page 19  
(Please turn to page 164)

"If you're looking for  
**DEPENDABLE  
PRODUCTS...**"



"then take a tip from me—

**Buy HARRISBURG  
FLANGES  
and  
COUPLINGS!"**

Experienced purchasing agents know Harrisburg products are dependable. Have you brought yourself up to date on Harrisburg Couplings and Flanges . . . prices, catalogues, and delivery? If not, please write for information to the address given below.

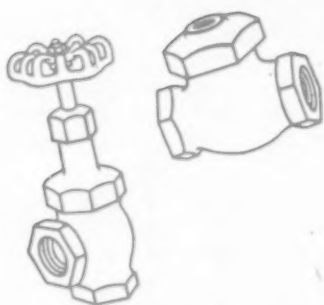
**Harrisburg**  
STEEL CORPORATION  
 Harrisburg 19, Penna.

**98 YEARS IN PENNSYLVANIA'S CAPITAL**  
Custom-Built Quality Products in Quantity

# Built for **BIG WRENCHES** and **HEAVY HANDS**



## O-B NO. 11 LINE OUTSIDE SCREW-OVER BONNET VALVES



Globes, Angles and Checks,  $\frac{1}{4}$  to 3 inch sizes. 150 lbs. W.S.P. 300 lbs. W.O.G. Regularly furnished with O-B composition steam discs, but special O-B synthetic rubber discs furnished for oil or gas service.

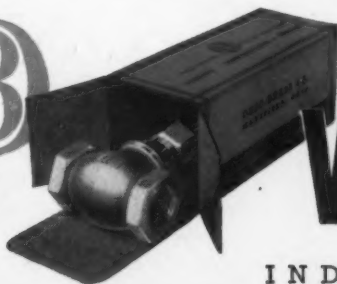
OHIO BRASS COMPANY  
MANSFIELD, OHIO

Take them down and re-assemble as often as you like—try them out on lines where severe service requirements call for periodic replacement of composition discs. These sturdy No. 11 Line valves can take it.

A husky bonnet hex provides a convenient and slip-proof wrench hold and one that is not "chewed up" by frequent disassembly. The outside screw-over design also protects the rest of the valve against careless nicking or scarring by the wrench. Heavy body wall sections, solid cast of high grade bronze, afford additional protection against other installation and service abuse.

The No. 11 Line of composition disc valves is recommended for all general maintenance and process installations where tougher than average service conditions exist. Your local Ohio Brass distributor stocks a complete line of O-B valves. See him for any of your industrial valve needs.

**Ohio Brass**



**VALVES**

FOR DOMESTIC AND

INDUSTRIAL USE





# Free...

## AIRCO'S NEW HAND TORCH CATALOG

—COMPLETE, AUTHORITATIVE INFORMATION . . . EVERYTHING  
YOU NEED KNOW ABOUT AIRCO TORCHES

Just fill in the coupon below and mail it to us today. Upon receipt, we will send you—**ENTIRELY FREE**—Airco's new 36-page guide showing the right torch for light, medium or heavy welding, cutting, heating, brazing, descaling and flame hardening.

Here is the booklet that gives you complete data on all Airco torches—nationally famous for their ease of operation, durability and dependability. Divided into easy-to-read sections, the booklet quickly helps you select the torch best suited to your particular production or maintenance problem.

The booklet is handy, useful, bringing you a wealth of information covering design, specifications, tip requirements for special operations, and operating characteristics of each torch in the Airco line.

To give you a brief idea of the material covered, here are a few of the sections the booklet contains:

- 14½ pages of detailed easy-to-read charts covering every welding, cutting and special purpose tip in Airco's complete line . . . *these charts are not available from any other source*, and they show you how to select the **RIGHT** torch, tip, mixer and extension for any job.
- All-purpose and moderately priced welding and cutting outfits for heavy-duty or light day-to-day welding and occasional cutting are shown in an illustrated 4-page section.
- Invaluable data on the right accessory—guide roller attachment, flash circle burner, hose connections, couplings, and so on—for the job at hand.

But see the booklet yourself—send for it now. Just fill in and mail the coupon for your free copy.

Air Reduction Sales Company  
A Division of Air Reduction Company, Incorporated  
60 East 42nd Street, New York 17, N. Y.

Please send me a copy of Airco's NEW Hand Torch  
Catalog No. 2.

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### AIR REDUCTION

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REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL

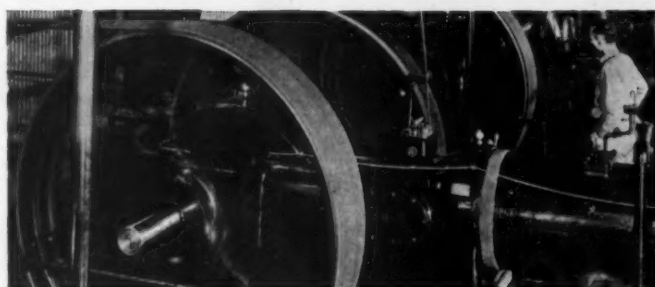
Divisions of Air Reduction Company, Incorporated

Offices in Principal Cities

# A Complete Line of Transmission Belts

## U. S. ROYAL TRANSMISSION BELT

Square-cut edge construction, no folds. Made with specially woven hard duck giving unusual strength with low stretch. Friction between plies is the highest quality obtainable, scientifically compounded for long life, extra flexibility. U. S. Royal friction surface provides superior traction on pulleys. Roll and cut lengths or made endless by patented U. S. Royal-Splice or by 'round and 'round method.



## U. S. RAINBOW TRANSMISSION BELT

Folded edge construction. A general purpose belt known for outstanding operational economy and for maximum dependability in severe service. Duck is woven to give strength and flexibility lengthwise and body stiffness crosswise. Special friction between plies assures remarkably long flexing and aging life.



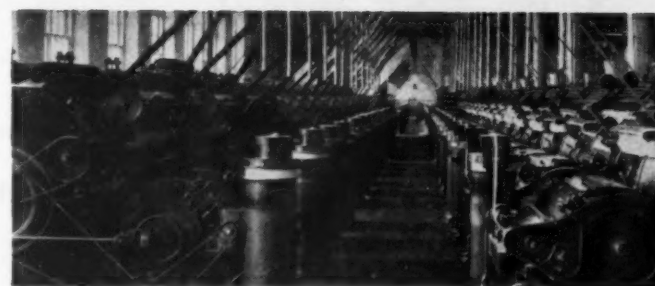
## U. S. ROYAL CORD ENDLESS BELTS

Royal Cord Endless Belts are designed for use on general purpose flat drives, ranging from light to heavy duty, where the use of low stretch, high tensile strength, extra flexible, premium construction, endless belting is mandatory. Furnished in seven weights; special constructions available for use under conditions of excessive oil, heat, abrasion and corrosive chemical fumes.



## U. S. ROYAL JUNIOR TRANSMISSION BELT

Designed for small machine drives. Constructed of plies of tough cotton duck, thoroughly impregnated with specially compounded rubber. A light, flexible true-running, elastic belt that performs extremely well at high speeds and withstands frequent shifting. Royal Junior has a wide range of application and requires minimum care.



## U. S. SPEEDAGE CORD ENDLESS BELTS

For use where long wear, smooth-running, high speed, small pulleys, shock absorption, infrequent take-up and oil resistance are encountered. Light enough to operate at speeds in excess of 10,000 F.P.M., and thin enough to operate over pulleys as small as  $\frac{1}{2}$ " in diameter.

Whatever your power transmission problem may be get in touch with "U. S." for the latest in technical advice and help. Write to address below.

PRODUCTS OF



UNITED STATES  
RUBBER COMPANY

Look for the "U. S." name when buying Transmission Belts.

**UNITED STATES RUBBER COMPANY**

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.



"I chose  
**KEX**  
National Service"

BECAUSE

1. Kex Service saves me money
2. No investment is needed—nothing to buy—just a low rental charge
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4. Towels are clean and safer to use
5. Clean towels are exchanged for soiled towels
6. This exchange system improves my housekeeping
7. It saves space—simplifies handling
8. Kex towels are uniform in size and texture



LOOK UP YOUR KEX DISTRIBUTOR in your local telephone directory or write to

**"KEX" NATIONAL SERVICE**  
REG. U.S. PAT. OFF.



295 Fifth Avenue, New York 16, N. Y.

Localized warming of chilly working areas is accomplished with a **space heating mat** that combines features of a wire-coil doormat with a large-area electric element. Called the Dura-Thermal Mat, it is a product of Walter B. Snook Enterprises, 751 Loma Verde Ave., Palo Alto, No. 138—For further information see Page 19 Calif.

Case-type **steel tapes** introduced by the L. S. Starrett Company, Athol, Mass., feature exceptionally rugged cases, and a practical patented folding tape hook mounted on the ring furnished at the end of the tape.

No. 139—For further information see Page 19

The Carlson Co., 277 Broadway, New York, N. Y., has made available a hand-operated **spring coiling machine** for making compression, extension and torsion springs. Said to be especially useful for making experimental or sample springs and for small production runs up to 500.

No. 140—For further information see Page 19

An **ear instrument** that will stop loud sudden noises from reaching the ear drum yet admit conversational tones is available from Sigma Sales Corp., 1491 North Vine St., Los Angeles, Calif. A sonic filter, not just an ear plug, it fits comfortably into the ear canal, has no wires or batteries.

No. 141—For further information see Page 19

Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago 7, Ill., says its new **vitrified bond**, "79E", will give grinding wheel and mounted wheel users a 5% to 10% boost in grinding and finishing output. Samples available.

No. 142—For further information see page 19

A new, **washable marking crayon** called Crayoff, can be used on metal, glass and wood. Soap base permits crayon marks to be wiped off with a damp cloth without marring the appearance or surface of the material. Made by Celco Corporation, 1631 Tenth St., Santa Monica, Calif.

No. 143—For further information see Page 19

Louisville Metal Products, 1101 W. Oak St., Louisville, Ky., has a new item for overhead work: **rolling platforms** constructed of Safe-Weight aluminum and scaffolding equipment. Ladders have 4" free rolling casters with locking device.

No. 144—For further information see Page 19

Eriez Manufacturing Co., Erie, Pa. has a new pressure-tight non-electric **magnetic separator** which will remove stray iron from liquids, slurries, and slips flowing in pipelines that vary in diameter from 6" to 20".

No. 145—For further information see Page 19



# PURCHASING

JANUARY, 1951

## OFFICE EQUIPMENT and SUPPLIES



PURCHASING MAGAZINE — A CONOVER-MAST PUBLICATION

205 EAST 42ND STREET, NEW YORK 17, N. Y.

# —Modernize—

## YOUR CATALOG AND BULLETIN FILES

Bring your source information up-to-date on new and improved office equipment and supplies by checking the latest trade literature listed on this page. This special office equipment section is in addition to the regular trade literature section on pages 19, 20, 22, and 24!

— When Writing to Manufacturers Direct, Please Mention **PURCHASING Magazine**.—

☐ **59. DESK PEN SET**—On letterhead request, the Esterbrook Pen Co., Camden, N. J., will send you new Dip-Less desk pen set for ten days' trial, without obligation. Unit holds a full ounce of ink, can't leak, won't flood, and features perfectly balanced pen with choice of pen points—fine manifold, fine writing, general writing, medium stub. Esterbrook Pen Co., Cooper St., Camden, N. J.

☐ **60. COLOR PENCILS**—Sample of Omega colored pencil with strong thin lead and colored end for instant selection, in "Tryrex" shape that prevents rolling, will be sent to you on letterhead request by the Richard Best Pencil Co., Inc., Springfield, N. J. Pencils are available in 24 waterproof colors that will not smear.

☐ **61. PHOTOCOPY UNIT**—Bulletin describes the Apeco copy-cabinet, photocopy unit which makes exact copies in one minute. Any business record or office form can be produced. The cabinet is a compact photocopy set-up in one self-contained unit that is completely portable. Reproduction principle does not require dark-room, only subdued light. American Photocopy Equipment Co., 2849 No. Clark St., Chicago, Ill.

☐ **62. ACCURATE CARD INDEXING**—Illustrated folder describes Triple Check Automatic Card Indexing Systems for use with name and index files. System may be applied to indexing problems of both large and small business or-

ganizations. Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y.

☐ **63. REPRODUCTION MATERIALS**—Kodagraph reproduction materials—autopositive paper (room-light handling), autopositive film, contact paper, projection papers etc. for modern drawing and document reproduction, are described in booklet available from the Industrial Photographic Division, Eastman Kodak Co., Rochester, N. Y.

☐ **64. CARD RECORDS**—Wheeldex card records and Wheeldex units and cabinets are illustrated and described in literature, which

explains their uses for sales, production, purchase, employment, inventory, credit, etc. Small desk model carries 1000 cards; other systems hold up to 100,000 cards. Wheeldex Mfg. Co., Inc., 40 Bank St., White Plains, N. Y.

☐ **65. THIN PAPERS**—Free test kit of Sea Foam Bond for multiple copies, factory and office forms, direct mail stuffers, space-saving records, airmail letterheads, etc., is available from the Brownville Paper Co., 28 Bridge St., Brownville, N. Y.

☐ **66. DUPLISTICKERS**—Sample package of Duplistickers for addressing duplicate mailings, direct mailings, bulky envelopes, etc., is yours for the asking. Typists address four or more copies in one operation on letter-size sheets of 33 gummed, perforated labels. Eureka Specialty Printing Co., 552 Electric St., Scranton 9, Pa.

☐ **67. ELECTRIC TYPEWRITERS**—Booklet R 8300, "Electric Typing vs Manual" tells the story of electric typing, and explains the advantages and economy of the Electri-conomy typewriter. Remington Rand, Room 2478, 315 Fourth Ave., New York, N. Y.

☐ **68. OFFICE EQUIPMENT**—New 1951 catalog illustrating line of typewriter tables and other steel, wood and Masonite office equipment, is being released by Maso Steel Products, 81 W. Van Buren St., Chicago, Ill.

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### READER SERVICE

All listings include names and addresses of manufacturers.

However, each one is numbered. If you want to save Multiple-letter writing, just jot down the numbers of the items you want and month of issue, and list them in a letter on your COMPANY letterhead to

Reader Service Dept.  
PURCHASING Magazine  
205 E. 42nd St.,  
New York 17, N. Y.

NOTE: This service also applies to all the new products, equipment and supplies listed on pages 130-164.

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*Great* NAMES IN INDUSTRY

## *Great* DESK EQUIPMENT

Exacting business men choose Morris desk equipment for quality, efficiency and years of service. Many famous users have their seals or emblems imprinted in Gold.



**THE BERT M. MORRIS CO.** has been extremely careful to design all their desk equipment for sturdy—efficient—time saving usage without sacrificing smartness. A rich appointment to any executive's desk, yet the complete setting shown—pen set, memo pad, phone rest, letter tray, ash tray and book ends, retail for little more than the cost of one higher priced,—comparable fountain pen set.

**MORRISET**—the constant-flowing, all-round writing implement that holds a full 2½ ounces of ink for months of writing without refill. Absolutely will not flood. Choice of five quickly replaceable "thread-in" points — extra fine, fine, medium, broad, stub.

**THERE IS NO SUBSTITUTE FOR QUALITY.** All Morris writing sets are equipped with iridium tipped points and each point is tested at factory by actual writing.



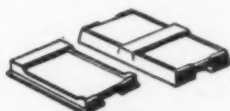
### MORRIS DESK EQUIPMENT STILL LEADS THE FIELD



**MORRIS FOUNTAIN PENS**—an efficient and economical pen set with "thread-in" point section. A real time and money saver in any office.



**BOOK ENDS—MORRIS BOOK-EZE**—at last an inexpensive book end to match modern office furniture.



**MORRIS MEMO PADS**—available in two types. With Jewelers Bronze bar that drops as paper is used or standard box style.



**MORRIS LETTER TRAY**—strong two point suspension allows access from entire front and both sides. Tiers quickly added, legal or letter size.



**MORRIS ASH TRAY**—A real He-Man ash tray. Glass lined, perfect for desk or conference table.

**BERT M. MORRIS CO.**

8651 WEST THIRD STREET • LOS ANGELES 48, CALIFORNIA



# PROCUREMENT of Administrative Tools

By **Elsie B. Gruber** Purchasing Agent, The Bigelow-Sanford Carpet Co., Inc.

**Spending a Million Dollars  
Annually for Office Equip-  
ment, Supplies and Printing**

IT seems that little attention has been given at purchasing association and group meetings, to the rather broad subject of procuring office equipment and supplies. Yet, these are the administrative tools upon which the entire operations of a company are dependent. Few persons give heed to the fact that the buying of office equipment and supplies may run as high as 3 percent of the total annual purchases. There is opportunity for profitable purchasing in the procurement of machines, equipment, and supplies that assure greater efficiency and production.

The Bigelow - Sanford Carpet Company, for instance, spends over a million dollars annually for business machines, filing equipment, desks, chairs, printing and the wide assortment of appurtenances that are to be found in the modern office.

**Elsie B. Gruber, Purchasing Agent,  
The Bigelow-Sanford Carpet Co., Inc.**

(c) *Bradford Bachrach*



A better understanding of our use of office equipment and supplies is revealed by the fact that we have approximately 600 employees in our New York general offices, with 125 of these employees on our management team. Many of the employees in this management group perform administrative functions for our district offices. In addition, there are large office staffs at our Amsterdam, New York, and Thompsonville, Connecticut plants, each of which has its own Purchasing Department for production and maintenance equipment, materials and supplies. The Purchasing Departments at the plants and at the New York office are directly responsible to the General Purchasing Agent, W. R. Murray, Thompsonville, Connecticut. The entire purchasing division is under the direction of F. Albert Hayes, Vice President for Purchasing, whose office is in New York.

Our section of the Purchasing Department is responsible for the acquisition of all office equipment, office machines, furniture, printing, stationery, forms and other supplies used in the general offices, our 25 district offices and 10 warehouses.

Last year we spent \$350,000 for office equipment and supplies, and \$325,000 for printing. This does not include printed matter and art work required by our Advertising Department, although we do collaborate with this department when requested. In addition, approximately \$90,000 was spent for maintenance and repair supplies, and \$60,000 for contract rentals, storage, samples and other miscellaneous expense items.

Considerable amounts are also spent locally by the plants for sta-

tioners merchandise and office equipment. The district offices are authorized to make specific expenditures of non-repetitive items (such as minor repairs, rubber stamps, ink, etc.) up to \$25.00 per purchase, issuing requisitions on the New York office for other requirements in excess of that value. Their general requirements are supplied by the New York office, either through the Stationery Supply Department, or by purchase orders issued from New York for materials requisitioned by them.

One of the basic purchasing principles which guides all our buying is complete cooperation with all departments. Our objective is to procure the specified materials and facilities of the right quality and quantity at the right price. Here is just one example:—

When it is necessary to purchase business machines for accounting, statistical and tabulating work, the Purchasing Department consults with the Organization and Procedures Department, whose department head is well versed in accounting methods and procedures, statistical preparation, the development of special reports for the executives, and the specific equipment that may be needed for the purpose. The equipment recommended is purchased from manufacturers by regular procedure through the Purchasing Department. Calculators, comptometers and adding machines are also acquired by requisition upon the Purchasing Department after consultation with the head of the Organization and Procedures Department.

Typewriters of standard make are purchased through the Purchasing Department on a national basis. We

now have about 150 machines in the New York office, and just recently replaced many of these in line with our obsolescence program. We have endeavored to maintain a policy of replacing our typewriters in the stenographic department every five years, and in other departments approximately every seven years.

All maintenance contracts for office equipment and machines are negotiated through the Purchasing Department. It is our policy to have all our office machines under an annual maintenance contract as we find this eliminates excessive repair charges. By keeping our machines constantly in good repair, the personnel is thereby encouraged to give more efficient performance. Electric typewriters are used for multiple forms, statistical reports, stencils and other duplicating masters.

This year we spent between \$15,000 and \$20,000 for steel desks and chairs. Our New York office is almost entirely equipped with steel desks, and we have standardized completely on steel files. Wood furniture is used in some of our offices where it is important to maintain a particular decor. This policy is also established for our district offices and plants. Some purchases are made for the district offices through local suppliers. We feel this is advantageous to us as it helps to maintain good vendor relations. Of course, quality, service, and price must meet our standards.

Typewriter ribbons are an important item in a big office, and we have found that it pays to buy only good, commercial quality ribbons. This is also true of carbon papers. A survey on the use and life of ribbons and carbon papers made with the cooperation of our stenographic

Rita Harding types the purchase orders on an electric typewriter. Vendor record is maintained on Wheelindex card file.



supervisor showed that definite money savings and more satisfactory work resulted from standardizing on the better quality products.

Printing buying is highly specialized, and the buyer who handles our requirements is well educated in the graphic arts and has had wide experience in the trade. We cannot do justice to our printing buying by giving you just a brief outline of this function, as it is entirely apart from the buying of office equipment and supplies, although under the jurisdiction of the New York Purchasing Department. Each job requires careful consideration and very few are "routine." Supplier's facilities are investigated so that savings can be effected by giving the right job to the right printer who has the right equipment. Complete specifications are furnished with every order, and vendors are requested to submit their quotations.

At least a thousand different forms are used by our Sales, Accounting, Production and other de-

partments, the buying of which is handled by Purchasing. There is close collaboration with the Organization and Procedures Department to avoid duplication, eliminate unnecessary forms, and to establish the need for new forms that may be required.

Our printing buyer has the responsibility of purchasing manuals; price lists; booklets; continuous forms for all purposes; rug and carpet labels; all tickets and tags; and in fact, buys almost every phase of printing required by our organization.

While the foregoing pertains to some of the major items of office equipment and general supplies, I might add that our section also has the responsibility of purchasing equipment and maintenance for our warehouses. Our range of buying is quite broad, running from staples to major warehouse requirements. Because of the volume and variety of office supplies and equipment used

(Please turn to page 172)

Wm. B. Mervine, assistant buyer, office supplies and equipment, and Arline Millen, follow-up clerk.



A. Schellhammer checks over details of printing job with a salesman. Last year some \$325,000 was spent for printing alone.



# Forms Include Debit and Shipping Memos

Purchasing Department Forms supplied by W. J. Neil, Purchasing Agent, The Sharples Corporation, Centrifugal and Process Engineers, Philadelphia, Pa.

**ORIGINAL PURCHASE ORDER**  
**THE SHARPLES CORPORATION**  
 2300 WESTMORELAND ST.  
 PHILADELPHIA 40, PA.

**PURCHASE ORDER NO.**

**Important** → THIS NUMBER MUST APPEAR ON ALL INVOICES, SHIPPING PAPERS, AND PACKAGES.

DATE \_\_\_\_\_  
 FOR \_\_\_\_\_  
 ACCOUNT \_\_\_\_\_

**SHIP TO:**

**DELIVERY REQD:** \_\_\_\_\_  
**SHIP VIA:** \_\_\_\_\_

**TERMS:** \_\_\_\_\_  
**FOB:** \_\_\_\_\_

QTY.	SYMBOL	DESCRIPTION	PRICE

THE ABOVE ORDER IS PLACED SUBJECT TO CONDITIONS ON REVERSE. BY \_\_\_\_\_

FORM 100-1-100

**REQUEST FOR QUOTATION - THIS IS NOT AN ORDER**  
**THE SHARPLES CORPORATION**  
 2300 AND WESTMORELAND STREETS  
 PHILADELPHIA, PA.

Date **TO** \_\_\_\_\_  
 Refer to File No. \_\_\_\_\_

PLEASE QUOTE PROMPTLY PRICE AND BEST DELIVERY

**THE SHARPLES CORPORATION**

Address Correspondence To: \_\_\_\_\_ Per \_\_\_\_\_ Purchasing Agent

QUANTITY	SYMBOL	DESCRIPTION	PRICE

Price Each Item Separately.

Delivery Required By: \_\_\_\_\_

Form 100-3-49 WE RESERVE THE RIGHT TO ACCEPT OR REJECT ALL OR PART OF YOUR PROPOSAL

Above: Purchase Order, which is on letter-size sheet. The "conditions on reverse" are shown on Page —. In addition to original and vendor acknowledgment, copies are made for Accounting, Purchasing, Expediting, and Receiving and Inspection departments.

Upper Right: Request for Quotation.

Right: This is record form on reverse of Purchasing Department copy of purchase order. It provides for record of Material shipped, Receipts, and Rejected materials.

**TSC 2 MATERIAL SHIPPED**

DATE	S. O. NO.	QTY.	DESCRIPTION

**RECEIPTS**

DATE	R. R. NO.	ITEM	QTY.	WEIGHT	DATE ACCEPTED	INVOICE NUMBER	UNIT PRICE	EXTRAS	DELIVERY CHARGES

**REJECTED MATERIAL**

DATE	S. O. NO.	ITEM	QTY.	D/M NO.	AMT. D/M	REMARKS

**TSC 3 RECEIPTS**

DATE	R. R. NO.	1	2	3	4	5	6	7	8	9	10



**CHANGE NOTICE**      **NY 18423**

Purchasing Dept. \_\_\_\_\_ Reg. No. TSC 8  
 Vendor: \_\_\_\_\_ Order No. \_\_\_\_\_

Please change above requisition as follows:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Date \_\_\_\_\_ By: \_\_\_\_\_

98-1-48-A

**ORIGINAL**

**THE SHARPLES CORPORATION** 2300 Westmoreland St., Phila. 40, Pa.

To \_\_\_\_\_ Change Order No. 751 2  
 \_\_\_\_\_ TO  
 \_\_\_\_\_ P. O. No. \_\_\_\_\_  
 \_\_\_\_\_ Date of Change \_\_\_\_\_  
 \_\_\_\_\_ Reg. No. \_\_\_\_\_

The purchase order referred to above originally read as follows:

ITEM QTY. \_\_\_\_\_

The above item or items are to be changed and amended as follows:

\_\_\_\_\_

Except as changed and amended herein the provisions of the original order remain unchanged and this change order is to be attached to and is made a part thereof.

THE SHARPLES CORPORATION  
 By W. J. Neel Per. Agent

PLEASE SIGN AND RETURN ATTACHED COPY

Change Notice: This form (8" x 5") originates in ordering department. Upon receipt thereof, the Change Order opposite is sent to supplier.

**VENDOR'S COPY**

**THE SHARPLES CORPORATION**  
 23RD AND WESTMORELAND STS.  
 PHILADELPHIA 40, PA.

TO TSC 6      **DEBIT MEMO. D 13386**

Date \_\_\_\_\_  
 Purchase Order \_\_\_\_\_  
 Rejection No. \_\_\_\_\_

Via \_\_\_\_\_

The following material was shipped to you on \_\_\_\_\_ on our shipping order of the same number as this Debit Memo. Your account is being debited as follows:

QUANTITY	NET	SHARPLES IDENTIFICATION	DESCRIPTION

EXPLANATION: \_\_\_\_\_

NOTE: All Replacement Shipments to Us Should Be Invoiced.

FORM 178  
T-48

Left: Debit memo used when returning materials to suppliers. Distribution is as follows: Vendor, voucher file, Purchasing, Accounting, Vendor's copy, Purchasing, and packing list. (See Shipping Memo below)

**VENDOR'S COPY**

**THE SHARPLES CORPORATION**  
 23RD AND WESTMORELAND STS.  
 PHILADELPHIA 40, PA.

To \_\_\_\_\_ **Shipping Memo. P 39396**

Date TSC 7  
 Purchase Order \_\_\_\_\_  
 Rejection No. \_\_\_\_\_

VIA \_\_\_\_\_

QUANTITY	NET	SHARPLES IDENTIFICATION	DESCRIPTION

EXPLANATION: \_\_\_\_\_

Shipped By: \_\_\_\_\_ Received \_\_\_\_\_  
 Date Shipped: \_\_\_\_\_ By: \_\_\_\_\_  
 Date: \_\_\_\_\_

98-1847-CF

Right: Return of material to suppliers is usually accompanied by Shipping Memo, copy of which is signed by supplier and returned to Sharples Corporation. Made in triplicate, copies being for Purchasing Department and Packing List.

(Please turn to page 179)

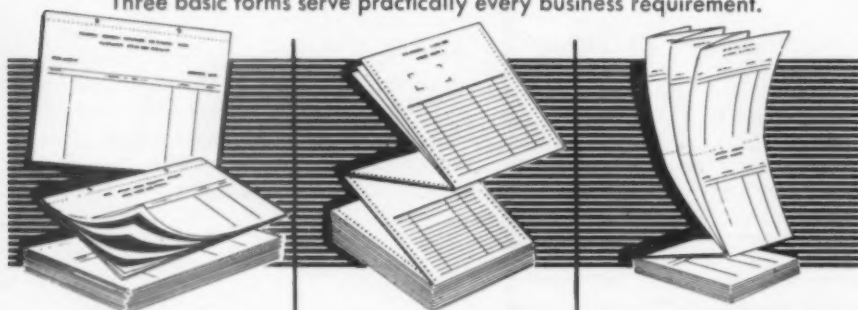
CUT YOUR RECORD-KEEPING COSTS

33% or more

WITH  
**AMERICAN Lithofold**  
"PLANNED" BUSINESS FORMS

For more than 15 years, American Lithofold has provided the nation's leading industries with efficient, labor saving forms. American Lithofold "Planned" Business Forms simplify and speed the flow of work, eliminate non-productive "form-writing" and reduce labor costs appreciably.

Three basic forms serve practically every business requirement.



#### CARBON LEAVED LITHOSET

Easy to insert—deleave. Special binding deleave all carbons with a single motion. Pre-punched to "planned" specifications. Perfect alignment where handwriting is advisable.

#### CARBON LEAVED LITHOSTRIP

Fits into the efficiency program of every department—shipping to advertising, sales to accounting. Fits typewriters and all fully automatic machines such as teletypes and tabulators.

#### HI-SPEED LITHOFOLD

Used widely in trucking, railroad, airline industries; wherever mass, single-purpose forms (such as freight bills) are required. Can be supplied fully or partially interleaved.

#### "4-STEP" ANALYSIS AND RECOMMENDATION

Covers all aspects; function, design, construction and cost of present and proposed forms. See for yourself how American Lithofold "Planned" Business Forms can increase your efficiency, boost output, reduce your company's record-keeping costs. The "4-STEP" analysis is yours for the asking without obligation.



MAIL THIS COUPON TODAY!

**AMERICAN LITHOFOLD CORPORATION**  
500 BITTNER STREET, ST. LOUIS 15, MISSOURI

- ☐ SEND SAMPLES of "Planned" Forms you have prepared for others in the \_\_\_\_\_ industry.
- ☐ WE WOULD LIKE to have an obligation-free "4-STEP" ANALYSIS of our business forms.

COMPANY NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_

WRITE FOR SAMPLES! "Planned" Forms, used by firms similar to yours, will enable you to see and judge for yourself how your company can save time and money in recording business operations. Samples furnished without obligation.

#### Procurement of Administrative Tools

(Continued from page 169)

by our Company, it is important that our buyers see as many vendor's representatives as possible. We read the news items about new products and equipment published in "Purchasing" and other magazines; we visit showrooms, and try to keep abreast of the new developments that spell efficiency and increased production. We frequently write for catalog and bulletin material, and often ask that a representative demonstrate new equipment.

Our stationery supplies are purchased from wholesale stationers with whom we deal regularly, and who keep us advised of new products.

Our Bigelow spirit is one of "teamwork" and this is carried out in all our activities, within the organization and also in our contact with outside sources.

1 1 1

#### NAMED EDISON NEW YORK CITY AREA SALES MANAGER

The appointment of Herbert S. Christman to the post of sales manager for the New York City area, is announced by the Ediphone Division of Thomas A. Edison, Inc., West Orange, N. J. Mr. Christman has been associated with Edi-



Herbert S. Christman, New York City area Ediphone Sales Manager

son in various sales assignments since 1932. He will be responsible for sales of the Edison Voicewriter throughout greater New York and succeeds Austin Cunningham who was recently promoted to the position of assistant divisional manager.

1 1 1

#### I. B. M. APPOINTMENTS

The International Business Machines Corporation, New York, N. Y., announces the promotion of John J. Kenney, director of sales promotion, to the position of IBM general service manager in charge of all customer service functions.

Announcement is also made of the appointment of Ivor C. Armistead, Jr., customer engineering manager in Phila-

delphia, to become manager of customer engineering in New York, and of Wm. E. Gallagher, assistant customer engineering manager in Los Angeles, as administrative assistant in the customer engineering department at New York headquarters.

#### STARTS PAPER QUALITY CONTROL AND EVALUATION SERVICE

Donald Macaulay, Inc., with offices at Chappaqua, N. Y., and laboratories in New York City, has instituted a printing paper evaluation service covering the regularly used papers, and reporting on their suitability for the specific job they are required to perform. The service offers three general classifications: First



Donald Macaulay, Chappaqua, N.Y.

is the 'spot' check involving the testing and reporting on papers for a specific job; second is the 'periodic' check to see that paper supply maintains consistent quality, and the third phase is a syndicate service which reports quarterly on all grades and brands of paper from all mills. In addition the company will publish monthly paper market reports which will carry news of trends, new grades, market conditions and values. Laboratory research and testing is also available.

The project is directed by Donald Macaulay, long prominent in the graphic arts field, and a graduate of Carnegie Institute of Technology, Department of Printing Management. For some time Mr. Macaulay has nurtured the idea of collecting in usable form all pertinent statistical facts about grades of papers, a brand or group of competitive papers, in order to measure and rate each paper in relation to printing process and end-use requirements. His activities as a paper consultant for large printers and publishers established the need for an analysis of such chemical characteristics as density and oil penetration, a study of the physical characteristics (tear, folding, weight, tensile and bulk) as well as visual characteristics such as brightness, whiteness, opacity, glare and smoothness.

#### CHICAGO SHOW PRINTING NAMES CLEVELAND REPRESENTATIVE

The Chicago Show Printing Company announces the appointment of Ralph A. Hodges as their point-of-sale representative in the Cleveland area, with office at 1836 Euclid Avenue, Cleveland 15, Ohio. (Please turn to page 174)



Webster's Spirit Duplicating materials are a carefully matched team, designed to turn out clear, clean copies with speed and economy. Used together, they simplify duplicating processes, and consistently give results of the finest quality.

Materials for every duplicating need are found in Webster's complete line.

**MultiKopy Shurclean Spirosets** . . . for results of finest quality. Master Paper and Spirit Hectograph Carbon in convenient set form. Purple and Black.

**MultiKopy Spirosets** . . . for long runs. Master units in Purple, Blue, Green, Red.

**Webstar Spirosets** . . . for runs not over 150 copies. Use with standard, noiseless or electric typewriters.

**MultiKopy Spirograph Carbon Papers** . . . separate sheets of flat spirit hectograph carbon in a variety of finishes and colors.

**MultiKopy Master Paper** . . . for use with MultiKopy Spirograph Carbon papers on Spirit Duplicating machines.

**MultiKopy Duplicating Fluid** . . . for finest results in any Spirit Duplicating machine.

**Carbon Paper Ribbons** . . . for "master" copies to be used on Spirit Process Duplicators.

**Star Skin Cleaner** . . . for quick removal of stain and dirt from hands. Contains no acid.

**O. K. Liquid Cleaner** . . . for removing ink stains of all types.

Next time you need long lasting Spirit Duplicating supplies of dependable quality, order Webster's. Consult your nearest dealer or write to F. S. Webster Company.

## F. S. WEBSTER COMPANY

7 Amherst Street, Cambridge, Mass.



**W99 RECORD OF CASH RECEIVED**

**W100 RECORD OF CHECKS ISSUED**

**W101 DAILY BANK STATEMENT**

**W102 JOURNAL**

**W103 VOUCHER OR INVOICE RECORD**

**W104 DISTRIBUTION OF INVOICES**

**W105 PETTY CASH DISBURSEMENT RECORD**

**W404 SALES ANALYSIS**

**W196 GENERAL LEDGER**

**HIDDEN WORKING ASSET**

**Stock forms to fit**

Standard Boorum & Pease Commercial, Bank and Business Forms are designed to fit your standard record-keeping needs. Designed with the cooperation of accountants, they are clean, convenient, time-saving—readily expandable without loss of system continuity. They have the completeness you would want if you personally designed them. Ask your stationer for samples of B & P stock forms in which you are interested. He can also supply, through our special department, ruled and printed forms to fit specific requirements. Ask him about this service.

FOR EVERY RECORD—A WAY TO KEEP IT.



## REMOTE CONTROL DICTATION SYSTEM ANNOUNCED BY EDISON

In a revolutionary approach to handling business correspondence, Thomas A. Edison, Inc., West Orange, N. J., has developed a system of remote control dictation known as the TeleVoice system, which consists of from one to twenty modified telephone dictating stations directly connected to a central recording instrument located near the secretary.



The man in the foreground is dictating at one of the TeleVoice stations

The recording instrument, known as the TeleVocewriter, records the dictation received on plastic discs, the transcription of which is accomplished with the standard Edison disc secretarial unit. The dictating stations can be located any distance from the transcribing station. Each station, it is stated, gives the dictator every one of the services he needs to dictate easily and accurately, including a means of listening back to what he has said and the facility for recording corrections.



The TeleVoice recording instrument is in left foreground, and transcribing unit is shown in background

Provision is made in the system for eliminating conflict between dictators who might wish to use it simultaneously. Because only dictators with a low volume of letter writing are put on the system, the chances of finding the line in use are placed at one in four. The company states the vast majority of those who dictate are "low volume dictators". A positive warning signal in the form of a small red light on each phone goes on when the system is being used.

While as many as 20 stations can be wired to one TeleVocewriter recorder, the average for commercial installations is ten. It is a simple matter to add more extensions if the work load increases sufficiently to warrant it.

The system eliminates the delay often caused by partially-dictated discs remaining untranscribed on the dictator's instrument. All handling and changing of discs is done by the transcriber.

# THIN PAPERS

Reduce  
MAILING  
TYPING  
FILING  
Costs.

Use  
**ESLEECK**  
THIN PAPERS

Air Mail Bond  
Clearcopy Onion Skin  
Fidelity Onion Skin  
Laid Thin Papers  
Prestige Onion Skin  
Superior Manifold  
Thin-Opaque

Recommended for  
Thin Letterheads, Copies,  
Records, Forms,  
Advertising.

Ideal for Air Mail, Branch  
Office and Foreign  
correspondence.

**SEND FOR SAMPLES**

**ESLEECK**  
Manufacturing Company  
Turners Falls, Mass.

## JOHN MAYER NAMED McBEE BOSTON MANAGER

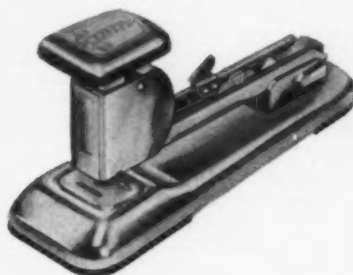
John Mayer has been appointed regional manager for The McBee Company at Boston with a territory including Massachusetts, Maine, New Hampshire and Rhode Island. He previously was district manager at Bridgeport, Conn.

John R. Dowling has replaced Mr. Mayer at Bridgeport as district manager, being transferred from New Haven where he was a salesman.

1 1 1

## ELECTRIC STAPLER STAPLES AT TOUCH OF THE PAPER

Electric stapling machine, which staples automatically at the touch of the paper, is being marketed by the Bates Manufacturing Co., 30 Vesey Street, New York, N. Y. Operation is simple, merely feeding the sheets to the machine whose hair-trigger switch does the work when the paper touches it, literally "shooting"



It staples automatically

the staples into the papers. The machine weighs but 27 pounds, is easily moved from place to place, and stands on rubber feet that won't mar, slide or slip. Bates states that the machine is jam-free, easy to reload, and good for 5000 shots of uniform stapling. It staples up to 20 sheets of medium weight paper, and saves time in mailing, collating, filing, mimeographing and duplicating.

1 1 1

## NEW FIVE-ACTION NUMBERING MACHINE

New model 95 hand numbering machine now being introduced by the Roberts Numbering Machine Co., 700 Jamaica Ave., Brooklyn 8, N. Y., is a five-action machine which permits the same number to be printed from one to five times, or it may be set for a continuous repetition of any number.

Chief mechanical feature of the new machine is the quickset dial which enables an operator to change the action instantly. Ten wheels can be accommodated, including number, letter, fraction and dash wheels. With the exception of the first wheel, all wheels are fitted with depressable ciphers which enables numbers to be printed without the Os preceding.

The action mechanism of the Roberts 95 is completely contained in the front cover section, which permits removal of the action mechanism by the removal of one screw, simplifying the installation of a new action.

(Please turn to page 176)

## Why OMEGA COLOR PENCILS DO A BETTER JOB



- 1—strong, thin lead holds needlepoint
- 2—light pressure makes clean, sharp figures
- 3—24 brilliant, water-proof colors—will not smear
- 4—ends colored for instant selection

plus  
FAMOUS

**TRYREX**

the shape that fits your  
hand—prevents rolling

**OMEGA**  
COLORED PENCILS

**It will cost  
you nothing**

to prove these points at your  
own desk. This coupon clipped  
to your business letterhead will  
bring you a free sample.

Richard Best Pencil Company, Inc.  
Springfield  
New Jersey

Please send free sample of the Omega  
Colored Pencil, to my attention:

Name \_\_\_\_\_

## "FINE PRINT IN CONTRACTS" NEW YORK FORUM

A highly interesting Forum Discussion on "Fine Print" in Contracts and Purchase Orders featured the monthly meeting of the Purchasing Agents Association of New York, at the Builders Exchange Club, November 9th. At the dinner meeting which followed, the guest speaker was Lieut. General Leslie R. Groves, USA, Retired, vice President, Remington Rand, Inc., who spoke on "The Impact of Atomic Energy on World Affairs."

Those participating in the forum discussion on fine print in contracts were M. D. MacBurney, General Purchasing Agent, Barrett's Division, Allied Chemical & Dye Corp., R. H. Haigh, sales executive of the same company, and H. W. Bertine, a corporation lawyer.

Mr. MacBurney said that he was "for all the fine print he could get on the front and back of a contract", stating that when it is there he knew that it is for his protection, that the fine print is to protect both purchasing and sales. "It gives us the tools that are necessary to work with in case of trouble" he said. "In most cases we do not need fine print, but there are times when we can be thankful the fine print is there. I think it is worth its weight in gold when it is needed." He expressed his disapproval of printing terms and conditions in faded blue and faded green and ghost

ink, exhibiting a page of terms and conditions so printed, saying such presentations make him suspicious and to look for trouble. "In many cases we find it", he stated.

"I think legal men should stop using two languages", he said. "The terms they put on a sales contract will cancel out those on a purchase order. They should put themselves in the shoes of sales and purchasing and not write terms that cancel out each other. Let's have enough fine print to cover double trouble, but let's have it easy to read so that it doesn't take a Philadelphia lawyer to interpret it. When legal writers write a sales contract they should put the purchase order in front of them, and make the terms agree."

Mr. Haigh criticized both sales and purchasing for failing to read fine print.

"There are clauses that have developed over a long period of time. Most of them are simple and easy to read. By and large most contract clauses are readily understandable, and should cause no trouble to any one who is able to call himself a purchasing agent or a sales manager." Important clauses from the sales point of view he listed as price revision or escalator clauses, and liability clauses with reasonable degree of limitation.

"The matter of how much fine print is necessary cannot be answered", he stated. It is like 'How high is up'. For many purchases, "fine print" is unneces-

sary." On the other hand a five year contract involving stipulated payments, deliveries and other factors, calls for the use of many specific terms. The use of fine print will vary with the situation."

Mr. Bertine pointed out that "Every purchase contract is a sales contract," saying "There are two sides to the deal. The salesman wants the best protection he can get. The purchasing agent wants to make the best deal for his company, that it is possible to make. Both want contracts that will give them the protection against suits and claims. Purchasing is not necessarily a simple transaction."

He said that legal tools are "words" and that these words in special clauses often have tremendous involvements. "We have developed what might be termed a special language. The legal phrases have different meanings. They have been tested in the courts. We know what they mean. If we tried to put them in modern language there would be a risk involved. If you feel that sales and purchasing terms should be identical, your association has a job to do. I think that different commodities and situations should have different terms."

The sense of the meeting was that "fine print" is necessary in some contracts, but "that there is a lot of it thrown in that isn't necessary." In cases where it is used to any great extent, the purpose is to provide the fullest protection possible, even covering "1000 to one shots".



# Actual Time Checks Prove:

## DUPLISTICKER Addressing

### Averages 27% FASTER

### than Addressing Envelopes

**DUPLISTICKERS** speed-up addressing, reduce costs, increase efficiency. Typists address 4 or more copies in one operation on letter-size sheets of 33 gummed, perforated labels. Paper is specially made for maximum number of clear copies. Ideal for mimeo and ditto duplicating. Clean, quick-part perforations, uniform stick-fast gumming. Completely trouble-free in every respect. Absolutely foolproof.

**SPEED-UP YOUR ADDRESSING  
WITH EUREKA DUPLISTICKERS**

Use "Duplistickers" for addressing all duplicate mailings, direct mail advertising, bulky envelopes, samples, premiums, etc. Postage indicia can be printed on labels for bulk mailings. "Duplistickers" serve dual purpose as address and seal on self-mailers and may be used on return cards. Package of 25 sheets (825 labels) 60¢ at leading stationery stores. White, blue, pink, green, canary, goldenrod, for color-coding.

• Write for **FREE**  
Sample Package

Eureka Specialty Printing Co.  
882 Electric Street  
Scranton 9, Pa.

**DUPLISTICKERS**  
are made only by **EUREKA**

## Good Advertising Your Corner card



DONGENCEN  
ADVERTISING COMPANY  
NEW YORK, NEW YORK

with **SHEPPARD**  
Better Quality Printing

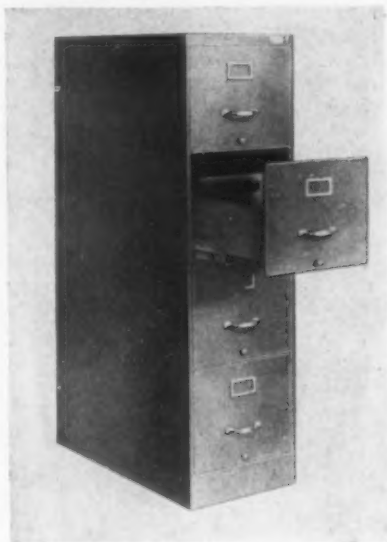


**ENVELOPE CO.**  
1 Envelope Terrace  
Worcester 4, Mass.  
The Envelopes with the FLAVOR SEAL Flap



## ANNOUNCE LINE OF SUSPENSION TYPE FILING CABINETS

Announcement of the manufacture of a complete line of suspension type filing cabinets in both letter size (drawers 14 $\frac{3}{8}$ " wide, 28" deep) and legal size (drawers 17 $\frac{1}{2}$ " wide, 28" deep), is made by Lyon Metal Products, Inc., Aurora,



Illinois. The cabinets feature rounded corners on drawer fronts. A  $\frac{3}{8}$ " pitch keeps the drawers closed and prevents a rebound when the drawers are closed hard. Six ball bearings and two floating rollers assure easy rolling and easy operation.

The cabinets are made in four models: 2 letter drawers; 3 letter drawers, 3 letter drawers and two card drawers; and, 4 letter drawers. Finish is green baked-on enamel.

1 1 1

### STANDARD REGISTER ISSUES REFERENCE FOLDER ON PRODUCTS AND SERVICES

A reference folder about Standard Register products, which had its origin in the published statement of a prominent purchasing agent detailing the things he must know about a product before he can fill a requisition, has been issued by The Standard Register Company, Albany and Campbell Streets, Dayton, Ohio. The purchasing agent had suggested that the salesman should leave with the purchasing agent a presentation which gives complete information on products, specifications, prices, delivery, terms, service, warranties, etc., in concise, readable form.

Checking with other purchasing agents and finding them in complete agreement with the ideas set forth, Standard Register prepared its "Reference Folder", designed to informatively present facts, which serves as a file folder and tab. The pages are thumb-indexed into nine sections, and its 20 pages carry a combination of illustrations and text so that all explanations are quite understandable.

The nine sections are as follows: (1) Products, (2) Delivery, Price, Packing, (Please turn to page 178)

*Fill it once...*

*write  
for  
months*



"Ink-locked"  
against  
accidental  
spillage

## Dip-Less® 444

### DESK PEN SET

IN BLACK, CLEAR, GREEN, GRAY AND MAROON

Such a wonderful desk set—for either the office or at home! Holds a full ounce of ink—writes for months without refilling—a full page or more at each dip of the pen. Easy to clean, easy to fill. And, with Dip-Less Sets you can

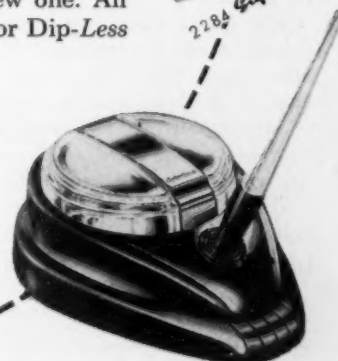
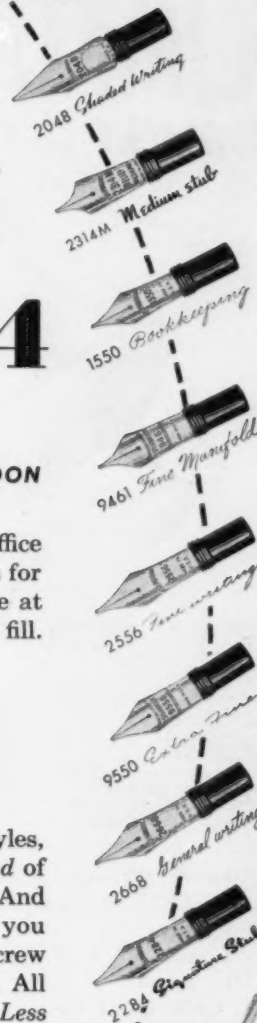
### CHOOSE THE RIGHT POINT FOR THE WAY YOU WRITE

From the world's largest variety of point styles, you can choose the precise point for your *kind* of writing and for *the way you yourself write it!* And should you ever damage your favorite point, you can replace it yourself—instantly! Just unscrew the damaged point and screw in a new one. All pen counters sell replacement points for Dip-Less Sets. Ask for a demonstration.

The Esterbrook Pen Company  
Camden, New Jersey

Prices slightly higher in Canada  
Copyright 1950, The Esterbrook Pen Company

**Esterbrook®**  
AMERICA'S FIRST PEN MAKER



Model 407 Dip-Less Desk Set

Extra large base holds two ounces of ink. Can't leak—won't flood. Visible ink supply. Choice of points.

# cut shipping costs... stop shipping mistakes with **UARCO** Bills of Lading!



Register shown is the Uarco Manifold Register. Large form capacity holds 300 2-part, 200 3-part, 150 4-part, 100 5-part forms. All copies issue.

**Faster Writing**—UARCO BILLS OF LADING in a convenient auto-graphic register . . . the fastest known method to write U.B.L.'s by hand!

All items covering your own products are pre-printed; the clerk completes the forms simply by checking. Writing of many details is entirely eliminated. And he does this just once—the register does the rest, turning out clear, crisp carbons for carrier, receiver, yourself.

**Lower Rates**—pre-printing assures

each product shipped is properly described to carry lowest rates. Over-charges from incorrect listings are eliminated. So are mistakes in routing, in checking at the receiving end. Uarco Forms pay back their cost over and over again!

**These Benefits Can Be Yours**—Uarco designs and prints BILLS OF LADING to fit every type of shipping operation; provides the right kind of register to use. Use the coupon below to secure a portfolio of sample U.B.L. forms.

UARCO Incorporated  
Room 1619, 141 W. Jackson Blvd.  
Chicago 4, Illinois

Please send samples of Uarco BILL OF LADING Register Forms.

Name.....Firm.....

City.....State.....



Factories: Deep River, Connecticut;  
Chicago, Illinois; Cleveland, Ohio;  
Oakland, California. Sales Representatives in all principal cities.

(Continued from page 177)

Terms, (3) Forms (stock), (4) Forms (custom-printed), (5) Registers, (6) Feeding Devices, (7) Auxiliary Forms—Handling Equipment, (8) Service, (9) Specifications and Warranties.

In companies where tabulating machines are used, another booklet of sample stock tabulating forms is presented as a companion piece to the purchasing agent's reference folder.

The folder is characterized as being a sales promotion job without any whoopee or fanfare, that performs a useful service for the purchasing agent as well as Standard Register.

1 1 1

## DESK ORGANIZER FOR EVERYDAY USE



Illustration shows handy "Tidy-Desk" organizer being marketed by the Victory Manufacturing Co., 1724 West Arcade Place, Chicago 12, Ill. The device holds pencils and pens firmly and conveniently in the flexible wire compartments, which can also serve for convenient placement of memos, and instruction sheets that demand current attention.

1 1 1

## TAPE DISPENSER SAVES WRAPPING TIME



Faster, neater wrapping and packaging, and up to three feet of tape with one stroke, perfectly moistened and measured, every one-half second—these are the claims made for new Clip-A-Tape gummed tape dispenser being made by the Ideal Stencil Machine Co., Belleville, Ill. The unit is of stainless steel and aluminum construction, and features a self-sharpening knife which always cuts cleanly, and a dependable non-skip feed which operates on a spring-free principle. According to the manufacturer, the dispenser eliminates such problems as skip-moistening, over-wetting, clogging, and frequent water replenishment.

(Continued from page 171)

PURCHASE REQUISITION					
Date: TSC 5		SYMBOL		Nº 2706	
For:					
Charge:					
QUANTITY	CODE	S/P	SPEC.	DELIVERY REQUESTED	PRICE
Vendor		Address			
ISSUED BY:	CHECKED BY:	APPROVED BY:	PURCHASING DEPT.	PURCHASE ORDER NO.	
DATE	DATE	DATE	DATE		
Form 100/9-48					

Purchase Requisition used by The Sharples Corporation.

"CONDITIONS" ON REVERSE OF  
SHARPLES PURCHASE ORDER

- Acknowledgment of this order must be made on acceptance copy attached and returned at once.
- There is no verbal understanding or agreement different from that stated on order.
- All transportation charges must be prepaid if sold F.O.B. destination.
- No charges will be allowed for crating, boxing or drayage unless stated herein.
- Any extra expense created in transporting materials caused by erroneous instructions or marking of materials by you, will be charged to your account.
- Defective materials will be returned at your expense plus inbound transportation charges if bought F.O.B. shipping point, and charged to your account. All goods shall be subject to our inspection and rejection at our plant.
- We assume no obligation for material shipped in excess of specifications or shipping releases. We also reserve the right to reject any portion of this order if not filled as specified.
- All invoices must be rendered in duplicate on the day of shipment accompanied by bill of lading. All invoices, packing slips and packages must show order number, number of packages, package number, point of shipment, and must designate how material is shipped. Material for two or more orders must not be put in one box or package unless carefully marked or tagged.
- Seller warrants that the articles purchased hereunder do not infringe any letters patent granted by the United States of America or by any foreign country, and covenants and agrees to save buyer and its successors, assigns, customers and the users of this product, harmless and indemnified against any loss, cost, claim or demand based upon any claim of infringement, and after notice seller agrees to appear and defend at its own expense any suits at law or in equity arising therefrom except that buyer may participate in the trial of any such suit at its option.
- Buyer has the option of refusing to accept delivery of material if shipped in advance of shipping schedule appearing on face of order, or a shipping schedule separately submitted in writing.
- The discount shall be calculated from the date of receipt of an acceptable invoice by the buyer.
- The price or prices shown will be considered to remain in effect if we are not advised to the contrary in writing before shipment is effected.

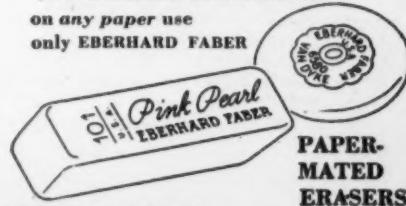
**smooth**  
as a black  
lead pencil!

Not tacky... not crumbly... Colorbrite doesn't feel like a colored pencil at all! But try one—the lead is packed with intense, brilliant color! Colorbrite writing is easier to read, even on colored papers or under fluorescent lights. What's more, its superstrong, elastic lead will bend to absorb writing pressure strain... guaranteed not to break in normal use! And work is wet-proof, smear-proof—yes, even fade-proof.



**Colorbrite**  
by **EBERHARD FABER**

For Cleaner Corrections  
on any paper use  
only EBERHARD FABER



TRADE MARKS REG. U. S. PAT. OFF.

**PAPER-MATED ERASERS**



## NEW KIND OF OFFICE COPYING MACHINE

Development of an entirely new type of office copying machine known as the BW Copyflex designed to make low-cost direct positive copies anywhere in a business office, is announced by the Charles Bruning Company, Inc., 100



New copying machine uses the BW  
Diaz process

Reade St., New York, N. Y. The new machine uses the BW Diaz process. It requires no inks, tray developing, dark room, subdued or special lighting, and copies any size of original matter up to 11½ inches wide by any length. The complete cost of an 8½ x 11" size copy

is said to average under two cents, including labor, materials, machine depreciation and all other charges.

Machine may be placed anywhere in an office, being connected to any electric outlet carrying standard 60 cycles, 110 volt alternating current. It is 29½" wide, 28" deep, and 50" high, and is easily moved from room to room.

The Diaz process is based on paper coated with aniline dye. Within the machine this dye coating is bleached by actinic light rays, except where the record or document to be copied has markings, such as typing, printing, or line drawings. These markings prevent light from bleaching the dye and a sharp, clean, black line is formed, reproducing the markings on the material being copied.

If the original document is marked on both sides or is on opaque stock, the machine quickly copies it onto BW reflex film, and the film is then used to make as many copies as are desired. Both sides of an original can be copied.

## PERSONAL LETTER FILE HAS ONE-HOUR FIRE RATING

The Meilink Steel Safe Co., Toledo, Ohio, is introducing an insulated personal file with ten tabbed Pendaflex folders. Known as the Hercules Letter Vault it is designed to provide the user with a safe, fire-resistant place for filing documents, bonds, and other valuable papers. Unit is said to be especially convenient

for personal records, and its size is such that it can easily be stored in private office cabinets. The Hercules letter file



The Hercules insulated letter vault carries the Safe Manufacturers National Association label certifying a one-hour rating. It is finished in a gray wrinkle finish.

## FORMS DESIGN MACHINE RULES FORM AND LEADER LINES

New Cold-Type machine which rules any type of form and leader lines while composing the typography for it at the

Sometimes the word "FILE" is confusing!

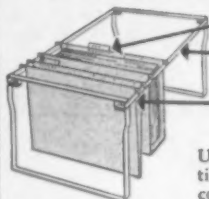
**FILE**  
as in  
JAIL BREAK



**FILE**  
as in  
Pendaflex®



## HANGING FOLDERS



Adjustable index tabs.

Low cost frame fits any file cabinet drawer.

Folders always hang upright on frame.

Used in offices of the nation's great industrial and commercial organizations.

Pendaflex Cuts Filing Costs 20% or MORE!

OXFORD FILING SUPPLY CO., INC. P  
Clinton Road, Garden City, N. Y.

Send us your Pendaflex Catalogue, and name of nearby Pendaflex dealer.

Name.....

Company.....

Address.....

City..... State.....

For direct  
mail pieces  
of superior  
quality



## IT ISN'T SURPRISING—THAT PRINTERS SAY RISING!

If you want to put your best foot forward in a prospect's door—mail-wise, that is—take your printer's advice. He will tell you to have your sales message, brochure or booklet printed on Rising.

And he should know! He has been getting nothing but the finest printing results from Rising Papers—results that are a credit to his craftsmanship and to the finer quality of Rising Intralace.

## Rising Intralace

1. has a distinctive pattern appearance.
2. is new brilliant white.
3. is inexpensive.
4. has envelopes to match in 5 sizes.
5. is specially sized for offset and gravure.
6. has an excellent surface for letterpress.

WHEN YOU WANT TO KNOW  
...GO TO AN EXPERT!

**Rising Papers**

ASK YOUR PRINTER

...HE KNOWS PAPER!

Rising Paper Company, Housatonic, Mass.

The operator merely presses a button to rule a single line, a double line, a line of dots or a line of dashes, or a combination of any of these. Spacing between lines can be varied to any width desired.



The DSJ Forms Design machine is a compact unit

The line length is selected and the ruling automatically ends at the selected length. In a matter of minutes a fine and accurate ruled form is removed from the machine, typography included, all ready for the camera.

[illegible]

The body copy and form were composed on the DSJ Forms Design machine

The DSJ Forms Design machine can be used for all other purposes of Cold-Type operation offering a selection of interchangeable faces of different styles and sizes. Type fonts are easily changed, and the type faces are designed in their natural width, the letter "I" for instance receiving less spacing than the letter "W". The keyboard operation of the machine closely follows the simplified pattern of the average office writing machine. Printed matter describing the new machine is available.

(Please turn to page 182)

**for Office Machine *Supplies...*  
ONE Call brings All the Best!**

**Remington Rand is supreme in the field of office supplies . . . supplies that help you get the *most* from your office machines!**

Remington Rand manufactures a carbon paper for *every* typing requirement. With the Magic Spot and other features for cleaner handling, each brand is tops in its field.

**Nylex**, the all nylon typewriter ribbon . . . insures sparkling clear impressions . . . *lasts longer* and produces *consistently better results*. Remember, too, there's a Remington Rand ribbon for every purpose and preference.

A demonstration will convince you of how Line-a-time will simplify and ease typing with increased speed and accuracy.

**Procel Stencils** produce quality copies. Ideal for Letters, Bulletins . . . all types of stencil duplication work. A stronger stencil, with the exclusive plastic coating affording greater sensitivity, makes Procel especially suited to illustrated stylus work.

**Plastiplates**—for offset duplicating in your office! The Remington Rand Direct Image and Photographic Plastiplates with their patented plastic surface makes them the nearest thing to stone lithography for office use. Superb reproduction qualities mean longer runs and greater uniformity . . . greater savings.

**FREE... Get a free analysis of your office machine and duplicating supplies needs by your Remington Rand specialist.**



**For your needs  
we have no reason  
to recommend anything but the  
right office machine supplies.  
*We make them all***

# Remington Rand

☐ I would like a free analysis of my office machine supplies needs.  
☐ Please send me literature on the following:  
☐ Carbon Paper ☐ Typewriter Ribbon ☐ Line-a-time Copy Holder  
☐ Procel Stencils ☐ Plastiplates . . . both Direct Image and Photo speed.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Announcement is made by the American Automatic Typewriter Co., 614 No. Carpenter St., Chicago, of Model 5100 Standard Auto-typist designed for use



with electric typewriters only. Less than one minute is required to remove any electric typewriter, and an equal amount of time to slip it back on the machine.

personalized letters a day, working exclusively on a letter-writing project. Or, the operator can perform other office duties and at the same time produce more than 150 letters a day.

To operate the Model 5100, a typist first slips a record roll into the record compartment, next placing a letter-head in the typewriter to type the salutation. That completes the typist's work. The machine types the rest of the letter automatically while she starts the other machines in the battery or goes on with other office routine.

A plan for making copies of addresses on gummed labels, promoted by Ditto, Incorporated, is said to be a time and money saver. Master sheets are available from the company which are ruled into 33 spaces, as are gummed perforated copy sheets which likewise are divided into 33 spaces. By typing the address on the master sheet, 33 to each 8½ x 11 page, the user can duplicate as many cop-

ies of the addresses as he is likely to use in a reasonable length of time. The master itself is then filed for use at a later date for making additional copies. Use of the labels is merely a matter of separating and moistening them for use.

	Henry Martin Belleville, Ill.		
		J. J. Johnston Pekin, Ill.	
	Frank Lamb 250 Pearl Place Glenview, Illinois	C. Hamilton 361 Grand St. Mannett, Ind.	
	Frank Christian Kewanee, Ill.	John Fry 523 E. Oakley St. Moline, Ill.	
Frank Mangin East Palestine Chicago, Illinois	W. Shelden North Duane Morton Grove, Ill.	Harry Jones 1125 West Chicago Chicago, Ill.	
	Wm. Allen 207 East Englewood St. Oak Park, Ill.	Phil Hamel 121 Lincoln St. Chicago, Ill.	
E. C. Knell Pekin, Ill.	Sam Mcintosh 147 N. Ave. Mannett, Ind.	Frank Poline 149 N. Ave. Mannett, Ind.	
George Shermak 207 E. Clark St. Waukegan, Ill.	John Winter 2226 Third St. Chicago, Ill.	Sam Miller 264 Northwest Av. Chicago, Ill.	
Paul Cline 405 E. 27th St. Chicago, Ill.	Harold George Lincoln Highway Chicago, Ill.	Wm. Strain 728 N. Wright St. Chicago, Ill.	
C. Miller 421 E. Madison St. Chicago, Illinois	Earl Clafford 220 Fifth Ave. Chicago, Ill.	George Arthur 523 E. Bell Ave. Chicago, Ill.	
Will East 1328 Phillips St. Evanston, Ill.	Anthony Claude Genevieve, Ill.	Samuel Schuch 1205 N. Grand St. Chicago, Ill.	
H. L. Allen 1201 North Ave. Chicago, Ill.	Wm. O'Duffy 120 W. Water St. Chicago, Ill.	Samuel Deeken 1702 E. 4th St. Chicago, Ill.	

Additions, changes and deletions are made in the master file by crossing out incorrect or old address, making new master for the corrected address. Sample master sheets and gummed labels will be sent on request by Ditto Incorporated, Chicago.

## Save Work, Time, Tempers, Material



**Weldon Roberts Erasers.** They come in exactly right shapes, styles, sizes and textures to do given erasing jobs best. They remove the risk of messy erasing with its frequent re-doing of an entire piece of work.

**WELDON ROBERTS RUBBER CO., NEWARK 7, N. J.**

*America's Foremost Eraser Specialists*



**121 ELLIPTIC** Soft gray eraser in handy elliptical shape for pencil or ink erasures on all types of work.

# Weldon Roberts Erasers

Correct Mistakes in Any Language

Here's a way to add the latest data on new developments to your catalog and information files with a minimum of effort.

The Reader Service Department of Purchasing Magazine will obtain for you any of the new trade literature listed on pages 19, 20, 22, 24 and 166 or additional facts on any of the products mentioned in the "New Products and Ideas" section, pages 130-164.

Simply write on your company letterhead, indicating the numbers of the items on which you want literature or further information.

Check these pages now, mentioning month of issue, and send your request to:

**Reader Service Department**  
**PURCHASING MAGAZINE**

**205 E. 42nd St., New York 17, N. Y.**



### FOUNTAIN TYPE FELT TIP MARKER

Felt tip marker is being marketed by the Ideal Stencil Machine Co., 112 Iowa St., Belleville, Illinois. The new marker is of the fountain type and may be used for all free hand marking in shipping departments. Made entirely of aluminum



and brass, the marker is  $7\frac{1}{2}$ " long, and weighs  $2\frac{3}{4}$  ounces. Ink is fed through a pressure-sensitive tip which controls the flow of ink from the fountain. When used with the company's quick drying ink, the marker actually writes dry. A hexagonal cap closes the ink supply, and prevents the marker from rolling when placed on a sloping desk.

1 1 1

### PUT NEW REVOLVING CARD FILE ON MARKET

Revco-File, Model "C", with self contained locking cover, has been introduced by Revco-File Sales, 11 Park Place, New York, N. Y. The Model "C" accommodates thousands of cards (uses present cards), and occupies an average floor space of three square feet. While primarily designed for card record systems, the design permits the filing of photographs, papers, contracts, etc.—any type of material that must be kept available for quick reference.



Standard colors include medium brown, gray or olive green

The file can be operated from any desired angle to suit the convenience of the operator and the contents of the file always approach in the natural line of vision. The Model "C" is available in standard sizes to accommodate cards  $3" \times 5"$ ,  $4" \times 6"$ ,  $5" \times 8"$ , as well as standard tabulating cards  $3\frac{1}{4}" \times 7\frac{3}{8}"$ .

### OFFICE VIGNETTES # 1 OF A SERIES



*We've got  
a  
swell P.A.*



MTPL-60 CRESTLINE Secretarial Desk

And he's probably listening, but we don't mind. You see, our Purchasing Agent just outfitted the whole office with Security CRESTLINE Desks. They make working a breeze and our office looks beautiful, too. And if you are the P.A.'s secretary why not drop this ad on his desk as a gentle hint.

*Crest* **LINE**

SECURITY STEEL EQUIPMENT CORP.

A VENEL, NEW JERSEY





# If You Want To Cut Costs

**YOU CAN ADD THIS UP**



# fast

**DRIVES FASTER—SAVES ASSEMBLY TIME**

- + HOLDS TIGHTER—FEWER SCREWS NEEDED**
- + SAFER TO USE—FEWER REJECTS**
- + DRIVES STRAIGHT—SAVES RESTARTING SCREW**
- + FEWER OPERATIONS—SAVES TIME**

**IT ALL ADDS UP TO**

## Important Savings for you!

Get all the facts on this new screw that fastens wood to wood, metal to wood, or plastic to wood. It has four new basic improvements—

- 1** Relieved shank diameter
- 2** Parallel twin threads
- 3** Cylindrical construction
- 4** Single centered point

Can be furnished in either Slotted or Phillips Recessed Heads.

WRITE TO ANY OF THE FIRMS LISTED TO LEARN HOW THIS

# TWIN-fast

Reg. U.S. Pat. Off.

**The Faster Driving . . . Cost Cutting Fastener**

You can identify  
**TWIN-fast**  
by its  
relieved shank  
and twin thread

**REVOLUTIONARY NEW SCREW CAN SAVE YOU MONEY!**

American Screw Company  
Willimantic, Conn.

Blake & Johnson Company  
Waterville 48, Conn.

Continental Screw Company  
New Bedford, Mass.

National Screw & Manufacturing Company  
Cleveland, Ohio, and Los Angeles, Calif.

Rivco, Inc.  
Downey, California

Southington Hardware Manufacturing Company  
Southington, Conn.

Stowell Screw Co., Ltd.  
Montreal, Canada



# AMONG THE Associations



## Connecticut Holds Annual Election and Thanksgiving Dinner Meeting

Some 225 members and friends of the Purchasing Agents Association of Connecticut attended the 16th annual election-Thanksgiving dinner meeting of that body, which was held in Swan Memorial,



**National Director Eugene D. Emigh, Jr. and President Wm. E. Stratford**

Seymour, Conn., Tuesday, November 28th. Guest speaker of the evening was Executive Secretary George A. Renard of the N.A.P.A., New York, who in the course of one of his pithy talks under the title "From One P. A. to Another",

stressed the need for a sound financial and economical program by the Government if the inflation of wages, costs and prices is to be stopped, and emphasized that this time is a time when Purchasing rates a leading place on the management team.

The meeting was presided over by President Eugene D. Emigh, Jr. Speaking of the recent demise of E. L. Alvord, purchasing agent, Rockbestos Manufacturing Co., he asked for the reading of a memorial to be presented to the bereaved family, and members and guests stood in silent tribute to his memory.

Secretary Fred A. Harvey next presented six membership applications, and two transfers, all of which were duly approved. The next order of business was the approval of a motion to confer upon Dan Williams, R. Wallace & Sons Mfg. Co., Wallingford, Conn., retired, who joined the association in 1919, and was its president in 1927, an honorary membership.

The report of the nominating committee was next read, and the following officers and directors were elected for the ensuing year:

**President**, William E. Stratford, Bridgeport Thermostat Div., Bridgeport, Conn.

**First vice president**, Herbert H. Carder, Waterbury Companies, Waterbury.  
**Second vice president**, Wilfred L. Hanford, Bush Manufacturing Co., Hartford.



**Lee Hanson, S. M. Eastern Div., Chase Brass & Copper, A. P. Hickcox and Sherman H. Pery, V. P. Sales, Chase Brass & Copper Co.**

**National Director**, Eugene D. Emigh, Jr., United Illuminating Co., New Haven.

**Secretary-Treasurer**, Fred A. Harvey, P. O. Box 229, Ansonia.

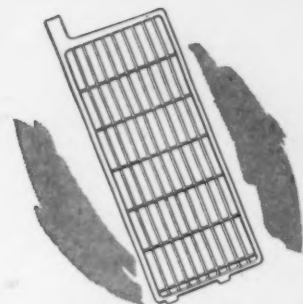
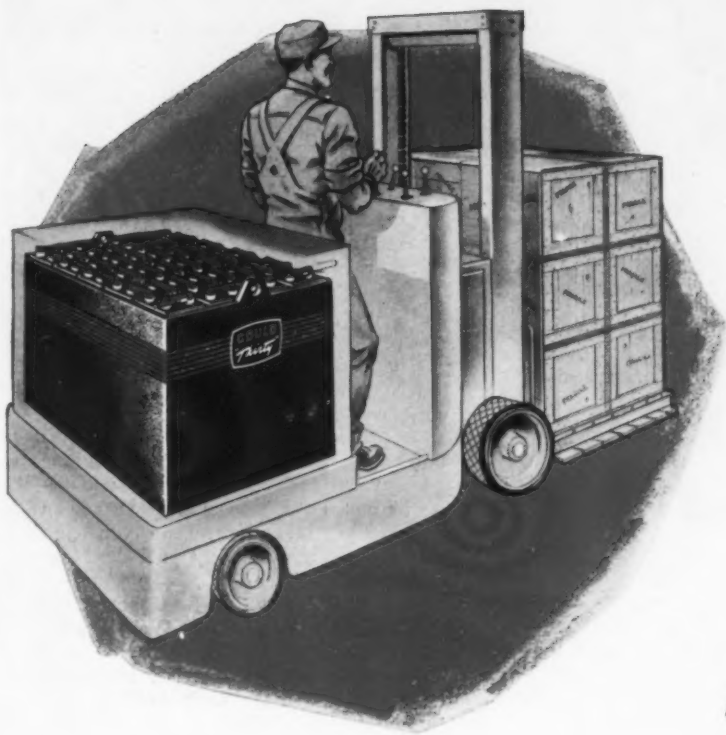
**Directors**: Fred W. Stolzenberg, Sidney Blumenthal & Co., Shelton, Conn.; George J. Raiselis, The Bassick Co., Bridgeport; David W. Kimball, Robertson Paper Box Co., Montville; P. Willard Nielsen, The Ensign-Bickford Co., Simsbury; James J. Donahue, The Miller Co., Meriden; H. S. Kellam, Trumbull Electric Mfg. Co., Plainville; George W. Fletcher, The Bigelow Co., New Ha-



**Earl Benson, DuPont Co., Fred Harvey, Secretary-Treasurer, and W. L. Hanford, second vice president**



**Past presidents of the Connecticut Association—Bill Roemer, Bill Horowitz and Tony Towle**

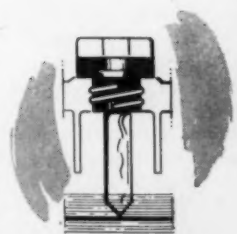


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This is the crew headed by Mrs. Fred G. Space, that is responsible for the fine New England Thanks-giving dinner that features the annual meeting of the Connecticut association

ven, and Fred W. H. Frohn, the Bristol Co., Waterbury.

Following the election, President Emigh called upon Fred G. Space, The Seymour Co., Seymour, Conn., to introduce the speaker of the evening, Secretary Renard of the National Association.

Opening his talk, Secretary Renard stated that the strength of the National Association was contingent upon the good leadership and constructive activities of the local associations and their officers. Commenting upon the progress that Purchasing has made since the organization of the N. A. P. A., he said that it has climbed far, and quoted a statement by Benjamin F. Fairless of the United States Steel Corporation, before a meeting of purchasing agents, to the effect that "a lot of people may think that I'm the boss of U.S. Steel but of course I'm not. In reality you are. You members of the National Association of Purchasing Agents and your colleagues in this specialized profession, buy all but a small fraction of our total production. You are our principal customers, and so it is you and the purchasing agencies of our government who determine just what kind and quality of product we shall turn out, how much we shall produce, how big or small we shall become and what our ultimate steel-making capacity shall be."

Talking about current economic conditions, Mr. Renard said, "Our craze for predictions and forecasts was joined to the belief or at least the acceptance of plans, planning and planners, but plans and predictions, planners and forecasters have been so wrong that only a fortune teller or an idiot would attempt to predict what is going to happen. Some are returning to the belief in a Supreme Plan, in an Architect of the Universe. That is my hottest tip. Give it careful consideration. I very frankly do not know of any other source for consolation in the mess we are in."

"A few months ago we were headed for a moderate deflation", he said. "Materials were in good supply and prices were tending to ease. Then some 'Gooks' in Korea started a civil war, and things went bloeoy. Some people say we will be in a major war soon; some think the thing will end shortly. Regardless, it

may have revolutionized conditions for a long time to come, unless we understand two important things and do something about them for Communism and socialism, (which is the same thing) can destroy our system of free competition and enterprise through inflation, and that in my estimation is their plan.

"This fellow Stalin", he said, "has the greatest empire and the most ruthless total dictatorship that the world has ever



Guest Speaker, Secretary George A. Renard of the National Association, Fred G. Space who formally introduced him, and Robert C. Swanton, a past president of the Connecticut and National Associations, and currently chairman of the National's Business Survey Committee

known. His plans have made our planning and planners look silly. Russia uses political-idea aggression; control of materials, economic aggression, and physical or military aggression. The main attack is on our economic and financial front where we are most vulnerable.

"Uncle Sam is deeply in debt. The figures are astronomical. We call it a deficit and that deficit will reach billions this year, it is increasing every day. We are selling shares in our deficit and our debt. We call them Government bonds. If you or your company were doing that it would be called bankruptcy and your bonds would not be worth much. When a government does that the same thing happens. We call it inflation. As long as we do that we will have inflation and all the price controls, priorities and allocations in the world won't stop it. We must have a sound financial and economical program by the Government if we

are to stop the inflation of wages, costs and prices.

"We must break out of the situation we are in, and I believe we will. If our dollar values and property values are not defended, everything can be lost to Communism and inflation. Our progress in that program affects you personally in all purchasing plans, policies and programs because it affects every market and every price.

#### Operations depend on Purchases

"Don't forget and don't let management forget that operations depend on what can be purchased more than on what can be sold. This is a time when Purchasing rates a leading place on the management team. In fact the team operates from a "P" formation with you calling the plays, if you do your job now for the more highly publicized defense program."

Speaking about the development of controls in the first World War he said, "We don't have the confusion as well organized as we did in about 1944. We are about where we were in 1941 and 1942—but, we may correct our mistakes faster this time if we don't forget that our major defense program is defense of the dollar from too many price advances.

Mr. Renard cited the following NPA controls: Regulation No. 1 limits inventories; supplements, interpretations. No. 2 provides priorities. No. 3 provides for Canada-U.S.A. priority exchange.

Order M-1, Steel distribution. Supplement No. 1, freight cars. Supplement No. 2, Ore carriers.

M-2, limits the use of rubber; M-3 limits the use of columbium and columbium tantalum steels; M-4 limits construction for amusement or entertainment purposes; M-5 aluminum distribution; M-6, Steel warehouse distribution; M-7, aluminum use limitation; M-8, tin use limitation; M-9, zinc distribution; M-10, cobalt use limitation.

And of great importance, he said, we have credit controls that will curb demand and loosen materials.

"Up to now we have had voluntary allocations", he continued. "Under vol- (Please turn to page 194)





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## New Officers Chosen At Carolinas-Virginia Meeting in Pinehurst, N. C., December 8-9

The winter meeting of the Carolinas-Virginia Purchasing Agents Association was held on December 8 and 9 at The Carolina, Pinehurst, N. C. More than 200 members and guests attended the session.

C. L. Wyrick, director of purchases, Dillard Paper Company, Greensboro, N. C., was elected president of the group for the coming year. Other new officers are: Jack T. Holt, assistant purchasing agent, The Erwin Cotton Mills Company West Durham, N. C., vice-president; L. B. Whitehouse, Jr., vice-president and

the field of purchasing has been outstanding, to James M. Berry, retiring president. The award, given in honor of W. G. Thomas, a founder and past president of the organization and director of purchases for the Duke Power Company, Charlotte, N. C., was returned permanently to Mr. Thomas at the Friday night banquet. The presentation was made by J. J. Barnhardt, also a founder and past president, and past vice-president and a director of Cannon Mills Company, Kannapolis, N. C.

Harold F. Jones, president of the



J. J. Barnhardt presenting the Thomas Award permanently to W. G. Thomas.



New officers: left to right—L. B. Whitehouse, Jr., secretary-treasurer; James M. Berry, national director; C. L. Wyrick, president, and Jack T. Holt, vice-president

purchasing agent, Morton Manufacturing Company, Lynchburg, Va., secretary-treasurer; James M. Berry, purchasing agent, Vick Chemical Company, Greensboro, N. C., national director. Mr. Wyrick is alternate national director.

Another feature of the meeting was the presentation of the Thomas Award, given to the member whose service in

National Association of Purchasing Agents, addressed the meeting on Friday afternoon. His subject was "Flywheels or Fifth Wheels". Following Mr. Jones' talk, a forum panel discussion was held under the leadership of W. G. Haddrell, Mathieson Chemical Corporation, Saltville, Va. Panel members and their topics were as follows: J. L. McDonald, fuel;

J. M. Geer, purchasing policies; J. B. Boyd, paper and containers; H. E. Wilson, utilities; D. G. Ward, furniture and lumber; C. M. Williams, governmental; W. B. Baskerville, mill supplies; and Paisley Boney, textiles.

A reception and social hour was held that evening with R. C. Atherholt, chairman of the entertainment committee as host. The banquet that followed celebrated the annual Ladies Night and Pre-Christmas Party. Speaker of the evening was Ogden Nash, noted humorist and poet. The Thomas Award was presented following Mr. Nash's address.

The Saturday meeting convened at 9:30 a.m. with J. T. Holt of Durham, N. C., chairman of the program committee, presiding. Principal speaker was T. A. Corcoran, purchasing agent of the Louisville Courier Journal and the Louisville Times, and past president of the N.A.P.A. His address was entitled "The Real Enemy—Inflation". J. H. Gaston, purchasing agent of the City of Baltimore and vice-president of District 8, N.A.P.A., then spoke on "N.A.P.A. Services". At 11 a.m. the educational committee presented a program on "Lumber", including a motion picture in full color. The meeting then adjourned.



Members of the panel forum: left to right—W. G. Haddrell, John M. Geer, J. Lewis McDonald, J. B. Boyd, R. V. Spangler, Paisley Boney, J. M. Potter, W. G. Baskerville, Jr., D. G. Ward.



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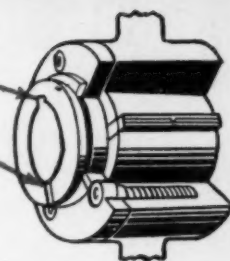
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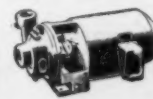
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Badger Die Casting Co., Milwaukee, Wis.

Central Die Casting & Mfg. Co., Inc., Chicago, Ill.  
Cleveland Hardware & Forging Co., Cleveland, Ohio  
Congress Drives Division, Tann Corp., Detroit, Mich.  
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THE RIDGE TOOL CO., ELYRIA, OHIO

Connecticut Annual  
(Continued from Page 188)

untary allocations you have to know someone at the main office, and a premium price helps. You would be amazed perhaps, at some of the back door and side door arguments used in the effort to secure priorities and allocations."

He cited economists to the effect that both regulators and regulations are running too fast. Concluding his talk he said: "This may be the sales manager's dream period, and it will bring nightmares to purchasing executives. But it is no time for frustration. Purchasing comes to the top in periods like this. But keep in mind that Communism, which is socialism, can destroy our business and industrial system through inflation."

1 1 1

### H. F. JONES GUEST AT MONTREAL ASSN. MEETING

A regular meeting of the Purchasing Agents Association of Montreal was held on Tuesday, November 21, in the Mount Royal Hotel. Principal speaker was Harold F. Jones, president of the American Association of Purchasing Agents. Mr. Jones topic was "Purchasing Looks At Management".

Professor J. A. Coote, formerly of McGill University, spoke at the afternoon panel discussion group meeting. Professor Coote, whose current interests are in the field of management and administration, had as his subject "Prerequisites of Successful Purchasing".

Among the association's new members are: E. Le Rossignol, George Weston Limited; K. E. Christmas; Canada Envelope Company; Lewis G. Morash, St. Regis Paper (Canada) Limited.

The February meeting, scheduled for Thursday the 22nd, will be the annual Ladies' Night meeting.

1 1 1

### PUBLIC RELATIONS EXPERT WASHINGTON D. C. MEETING

David Wills, director of Public Relations of the International Monetary Fund was the principal speaker at the November meeting of the Purchasing Agents Association of Washington, D. C.

Mr. Wills, who has had a varied newspaper and radio career, spoke on "Public Relations in Purchasing". He complimented the National Association of Purchasing Agents for its pamphlet on public relations, an activity which he called the "magic department". He stressed that internal relations can make very bad public relations, and that the attitude of membership in any organization or company toward public relations is all important to a program of public relations. Mr. Wills described the United States as a "sellers' country" and said that with the rising cost of living, purchasing had a splendid opportunity to give the country the other side of the economic picture by discussing the purchasing viewpoint

(Please turn to page 198)





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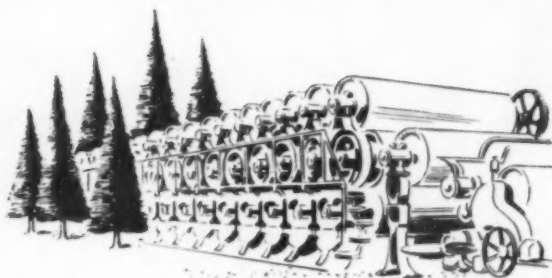
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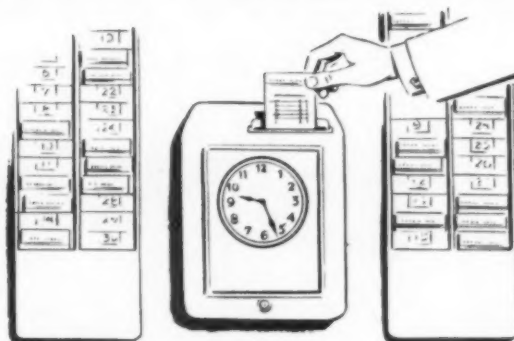
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quick drying towels. No time-consuming gadgets to fuss with. Reduces time spent in washroom. Gets employees back on the job faster.

Sparkling white Nibroc cabinets in your washroom mean fresh, soft, absorbent, lint-free personal towels for everyone. And Nibroc dependable service offers you a wide range of towels—singlefold and multifold, white or buff—to meet every washroom requirement.

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(Continued from Page 194)

through the media of radio, television and the press.

The annual Christmas party of the association was held at the Club 2400 on December 20.

The annual National Night Meeting is scheduled for January 16. Among the guests will be "Hack" Jones, N.A.P.A. president, and Stuart F. Heinritz, editor of PURCHASING.

1 1 1

## ANNUAL PARTIES FEATURED IN LOS ANGELES ASSN. AFFAIRS

Two annual parties were the highlights of recent activities of the Purchasing Agents Association of Los Angeles. More than 1,000 members and friends attended the annual Hi-Jinks and Stag held on December 1 at the Elks Temple. The annual Christmas Children's Party was held on December 18. More than 150 children were entertained.

George W. Aljian, past president of N.A.P.A., was the principal speaker at a recent meeting of the Electric Club of Los Angeles. Members of the Los Angeles association were honored guests at the meeting. In a talk entitled "Every Day is Purchasing Agent's Day", Mr. Aljian thoroughly covered the relations between purchasing agent and supplier. Virgil Waters, president of the Los Angeles association, was chairman for the day. Arrangements for the meeting were made by Wallace Stanford, public relations chairman.

More than 150 members recently visited the plant of the Johns-Manville Corporation. Features of the visit were a tour through the plant, viewing of the film "Underground Activities", and luncheon in the company cafeteria.

"What's Happening Industrially" was the topic of an address by Carleton B. Tibbetts, president of Los Angeles Steel Casting Company, at the association's regular monthly meeting. More than 225 members heard Mr. Tibbetts discuss whether or not we are producing next year's requirements today, and our ability to consume present production.

An educational seminar held November 21 featured Robert D. Gray, professor of economics and industrial relations at the California Institute of Technology. His subject, "The Effect of the Purchasing Department on Personnel and Industrial Relations" provoked interesting round table discussion.

1 1 1

## HUMAN RELATIONS IN BUSINESS CHICAGO ASSOCIATION

Laurence C. Hart, Vice President for Relationships, Johns-Manville Corp., was guest speaker at the December 14 meeting of the Purchasing Agents Association of Chicago, his subject being "Human Relationships in Business." Mr. Hart is a specialist in sales problems and management as well as human relations, and is a member of the Industrial Relations Committee of the National Association of Manufacturers.

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Unbelievable? Perhaps, but Lunkenheim's amazing new bronze stem metal has actually been tested at more than 300,000 openings and closings—the equivalent of years and years of rigorous service. Wear-test machines, carefully controlling torque and number of turns, have registered more than 300,000 cycles in the continuing tests—with live steam flowing through the valves. This stem has also been exhaustively tested under severe field conditions. Literally millions of stems have been placed in service, and not one has ever been returned due to wear failure. The remarkable stem metal, which has revolutionized all prior conceptions of valve stem life, is called Stemalloy\*. It is a special-purpose bronze developed exclusively by Lunkenheim, and is not commercially available. Only Lunkenheim valves have the Stemalloy\* stems. Ask your leading industrial distributor for information on the complete Lunkenheim bronze valve line, or write The Lunkenheim Co., Box 360M, Cincinnati 14, Ohio.

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**TOLEDO ASSOCIATION HAS  
UNIQUE "FARM" MEETING**

The regular November meeting of the Purchasing Agents Association of Toledo, held at the Toledo Yacht Club was a unique "farm style" meeting.

Following a regular farm type dinner in the dining room, members and guests went to the ballroom where prize farm produce was on exhibition. Many came for dinner dressed in their version of farm "duds". "Ray & Ed" played accordion and violin selections as strolling musicians during the dinner hour.

President Richard Hardgrove conducted the regular business portion of the meeting. National director Walter Bohn gave his report on the Sixth District Council meeting in Columbus. After the business meeting the musicians called together a quartet, which appeared with an extra. They were: Ev. Curtis, Bob Hecker, Bert Lang, Walter Todd, and Walter Bohn. The group sang several songs.

Later numbers were drawn and all of the farm products were distributed as prizes.

The following new members were elected: Walter Gogel, Walter Gogel Co.; Leslie H. Bothast, Van Nest Supply Co.; Oliver M. LaVallee, Toledo Desk & Furniture Co.; Kenneth F. Seeber, Sentle Trucking Co.; Morgan P. Wilkins, Morgan P. Wilkins Company.

The annual Christmas Party of the association was held on Saturday, December 16, at the Toledo Yacht Club. Attendance was limited to members and their wives and ladies.

1 1 1

**ATTORNEY GUEST SPEAKER AT  
CHATTANOOGA ASSN. MEETING**

Charles A. Noone, local attorney, who recently returned from an extended tour of Europe, was the guest speaker at the November meeting of the Purchasing Agents Association of Chattanooga. Mr. Noone's topic was "A Few Observations on the Economic Situation in Some European Countries".

It was announced that plans for the association's fourth annual Industrial Show are still being formulated. The show will be held in Chattanooga during the first week in March.

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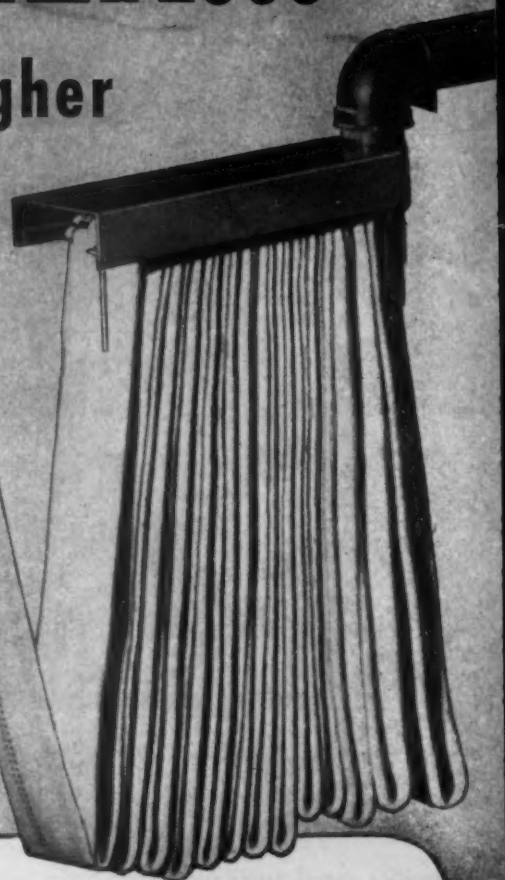
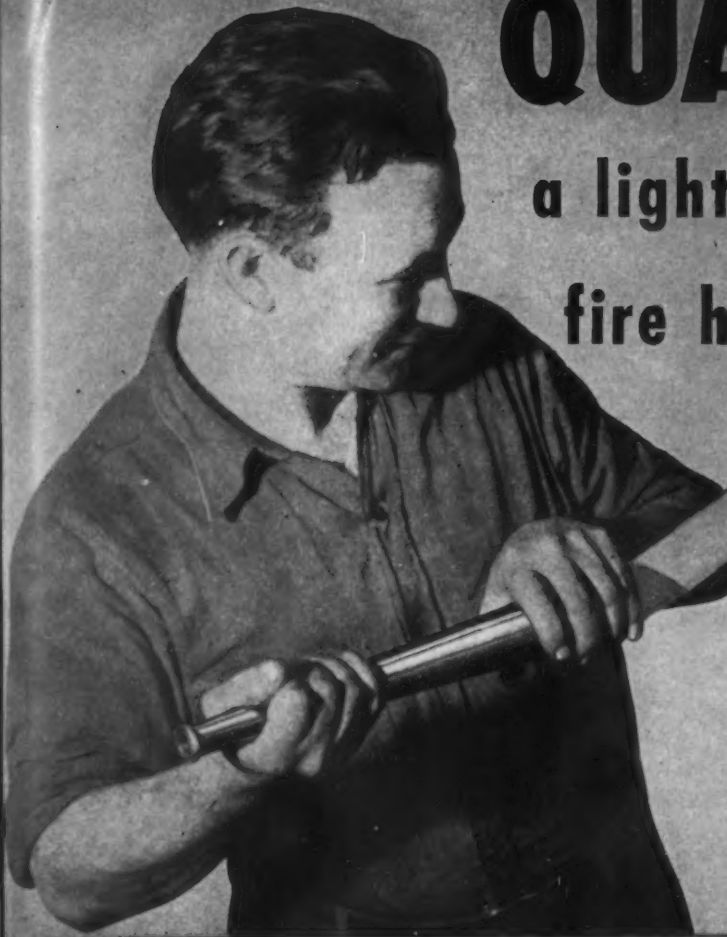
**HAROLD HOWE DISCUSSES  
GOVERNMENT CONTROL, ST. LOUIS  
MEETING**

Harold K. Howe, Washington representative of the La Salle Steel Company, was the principal speaker at the November 28th meeting of the Purchasing Agents Association of St. Louis at the Hotel Sheraton in that city, his subject being "The P. A.'s Problem—Government Control." His talk was followed by a Commodity Discussion, with Fred J. Risberg as leader. Previous to the dinner meeting, "Trees and Homes" was the theme of visual educational forum, featuring N. A. P. A. prepared color (Please turn to page 202)



# QUA-FLEX...

a lighter, tougher  
fire hose



## QUA-FLEX STAYS LEAK-PROOF... FITS MOST TYPES OF RACKS AND REELS

Here's a fire hose that defies leakage. Its rubber lining remains resilient and resists cracking. Qua-Flex dries quickly... packs compactly... is flat folding and easy to handle.

Qua-Flex is more flexible and weighs less than ordinary fire hose, yet it's guaranteed to withstand a test pressure of 300 lbs. p.s.i. Qua-Flex's flat-folding qualities eliminate bulky folds allowing racks and reels to carry greater footage without additional bulk. Qua-Flex's 1½" size has Factory Mutual approval. Available in 1½", and 2½" sizes; 25', 50', 75', and 100' lengths.

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For full information on the complete range of sizes and types of Quaker Fire Hose available, write for Bulletin 64.

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MOLD CASTINGS. WELL-MADE WOOD AND METAL PATTERNS.**

**THE WELLMAN BRONZE & ALUMINUM CO.**

**2531 EAST 93rd STREET • CLEVELAND, OHIO**

(Continued from Page 200)

film on lumber from log to finished product. Wm. M. Bridwell presided at the educational meeting.

On Thursday, November 16, 35 purchasing agents and buyers visited the plant of the Hussman Refrigerator Company. On December 13th, an educational-luncheon meeting was held at the Claridge Hotel, with Paul O'Brien as commentator, presenting the Purchasing-Production picture with a panel of purchasing and production men who carried on the discussion and answered questions from the floor.

On December 9th, the St. Louis Association held its annual Christmas Party in the Chase Club, Hotel Chase, featuring the Xavier Cugat orchestra and Latin-American Review, and cocktails, dinner and dancing. Tickets for the affair were \$8.00 per person—members' ladies free.

Two new membership and two membership transfers were approved at the association's October meeting, making the total membership 288.

♦ ♦ ♦

#### **WASHINGTON ASSOCIATION ISSUES REVISED BY-LAWS BOOKLET**

The Purchasing Agents Association of Washington, Seattle, Wash., has just issued a booklet containing the association by-laws as amended from time to time since their adoption in 1929.

The by-laws provide for three types of membership, namely, Active, Junior and Honorary—purchasing agents, their assistants and buyers being eligible for active or junior membership. Dues for active memberships are \$25. per year, and \$7.50 per year for junior membership.

Junior membership in the association is confined to purchasing agents, assistants or buyers, whose firms already have one or more active members. Junior members have all the rights and privileges accorded active members except that they are not entitled to vote or hold office, do not have any property rights or interest in the corporation, and are not entitled to membership in the NAPA.

Honorary memberships are awarded in recognition of distinguished or unusual service rendered to the association or to the purchasing profession, to individuals not qualified for active membership. Honorary members are not entitled to vote, to hold office, are not entitled to membership in the NAPA, and are exempt from payment of fees and dues. When a member shall cease to be a purchasing agent, his assistant or buyer, his membership is cancelled. The by-laws specifically provide that there shall be no succession of membership in the association.

The Board of trustees is made up of 17 members, and the officers of the association are president, first vice president, second vice president, treasurer, secretary and national director. Trustees are elected on the basis of six one-year tenures and three three-year tenures, plus a one-

(Please turn to page 206)

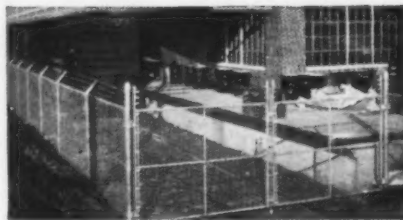


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\*Due to present national defense requirements, KONIK will not contain standard amounts of nickel and chromium, two of the most critical war materials.

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ALSO, Coated and Uncoated Steel Sheets, Nails, Continental Chain Link Fence, and other products.



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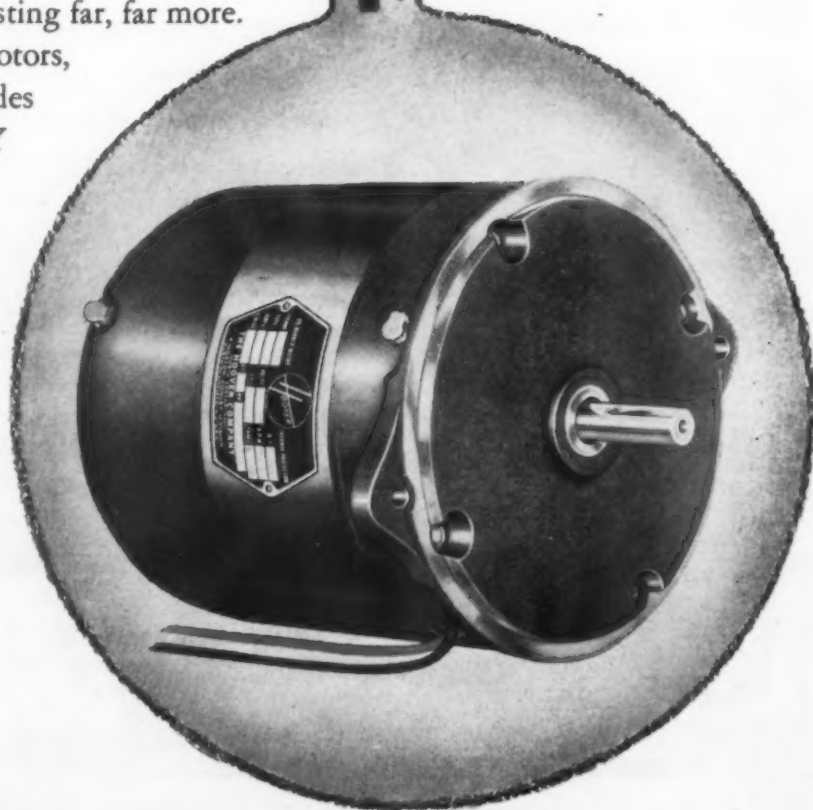
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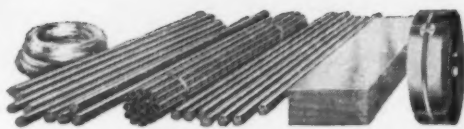
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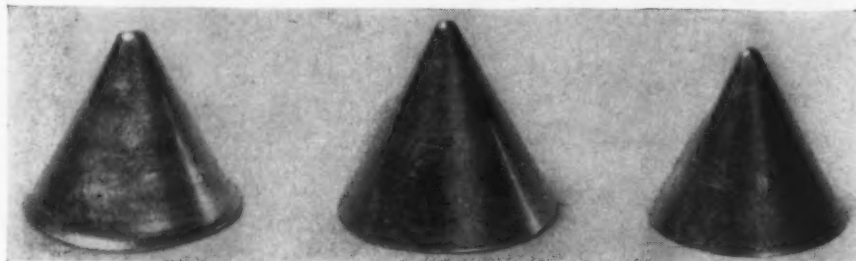


BRIDGEPORT BRASS COMPANY

# COPPER ALLOY BULLETIN



MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



Stages of production of copper cone shows: the cup produced in an eyelet machine with no wall thinning; the cup after stamping, in which the wall is tapered from 0.024 in. to 0.032 in.; finished cone after trimming in shimmy die—Courtesy John Ahlbin & Sons, Inc., Bridgeport, Conn.

## Copper Cone Accurately Stamped with Punch and Die Inserts

The use of inserts in header dies has increased die life by reducing the tendency of dies to crack.

Using this same principle, it was possible to stamp the illustrated copper cone without cracking of either the punch or die.

The finished part has a large diameter of 1-1/4 inches and is 1-3/16 inches high. It is essential that the wall taper from 0.024 in. at the tip of the cone to 0.032 in. at the mouth.

The cup for the stamping operation is made in a multiple-plunger press by the folding method, from 0.032 in. copper strip. The blank is then annealed.

### Solid Dies Fail

When the cone was first engineered, solid dies were made. Due to the pressure necessary to taper the wall 0.008 in., cracking of both punch and die occurred. If the punch was drawn back to a softer temper, it then would be pounded into the shape of the die, removing the difference in angle to obtain the tapered wall thickness. Finally inserts were made of 5% chromium hot-work steel. These were hardened and drawn to a 60-61 Rockwell C hardness and chrome plated, then shrunk into holders.

The holders were made from tool

steel but not hardened, making strong, tough backup material for the dies. The hardness of the punch and die, plus the chrome plating, cut wear to a minimum. The chrome plate also reduced the tendency to gall.

A bottom-stroke press was selected. Impact was therefore minimized. The press was aligned and it was found that an open die set produced accurate shells with a variation of not more than 0.001 around the cup.

### Accurate Cups Necessary

Accurate cups from the eyelet operation with a minimum of variation were found necessary to control concentricity.

Trimming of the finished cone presented another problem. The edge had to be parallel to the horizontal axis of the cone. Distortion also had to be eliminated. A shimmy die, operated by four cams, was chosen.

The bottom die was made to nest the cone accurately. The tip of the punch fitted snugly and was spring-loaded with a universal action and the cutting action was from the inside of the cone outward. The trimmed edge was clean.

Since a soft cone was required, it was given a full anneal after the trimming operation.

## Stress Relief Anneal Needed to Protect Coldworked Parts

Coldworking, such as stamping, roll threading and drawing, especially of the high brasses, sets up stresses in the part which under humid conditions can produce season cracking.

When copper-base alloys are highly stressed, season cracking is not inevitable since four other requisites are involved: ammonia, moisture, oxygen, and type of alloy.

The history of the illustrated oil reservoir cap shows to some extent the phenomenon of season cracking.

The shell which cracked not only was drawn into a cup but a very coarse broad thread was rolled on.

For several years this cap gave good service. The tank and cap were always left on the heater, in the kitchen.

However, one summer the tank was left in the cellar. When an attempt to

remove the cap was made in the fall, a strap wrench was necessary.

Examination showed a crack running from the lip to almost the base which caused the shell to go out of round and bind. Another cap was purchased and the following summer the tank was again left in the cellar. The same thing happened under the humid, musty conditions in the cellar. However, the cap on a second tank did not crack when it was kept in the kitchen.

### Removal of Stresses Needed

Stress relief annealing at a temperature below the recrystallization point of the high brass would have relieved the residual stresses set up by coldworking and preventing cracking.

The use of copper or high copper alloys above 85% copper such as red

brass, gilding metal and the silicon bronzes will help to reduce the danger of season cracking, but very highly stressed metals, no matter what the alloy is, should be stress relief annealed to insure against such failure.

(6156)



Yellow brass cap for oil reservoir which season cracked due to stresses set up in roll threading operation.

THE BROWN COMPANY, Quality Paper Makers of Berlin, New Hampshire, says: "In seven months—

# This Lubricant

saved us  
\$2,098.16"



"During the seven month period before using LUBRIPLATE No. 130AA in the bearings of our Kraft Mill Lime Kiln, we used a conventional oil of the density recommended. The cost of the lubricant for the period was \$2,134.00. In the seven months that followed, we only used 128 lbs. of LUBRIPLATE No. 130AA for initial filling and replacement at the cost of \$35.84. LUBRIPLATE No. 130AA only requires weekly applications whereas the former lubricant required daily application."

The Brown Company is a progressive organization that is continuously seeking ways to improve their products, their methods and to cut costs. Naturally, when they found LUBRIPLATE No. 130AA, a grease type lubricant with great adhesive qualities, high film strength, and with high heat resistance, they saw the possibility of using it to their advantage in the bearings of their kilns and other equipment.

LUBRIPLATE Lubricants are available from the lightest fluids to the heaviest density greases. They reduce friction, wear and power consumption, they prevent rust and corrosion, they last much longer than ordinary lubricants. There is a LUBRIPLATE Lubricant that is best for every lubrication requirement. Let us send you information about the use of LUBRIPLATE Lubricants in your industry. *Write today.*

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# LUBRIPLATE

**THE MODERN  
LUBRICANT**

(Continued from Page 202)

year nominee from the Seattle group and one from the Tacoma group.

The Board of trustees is made up of 17 officers, agents and employees of the association.

Standing Committees consist of the following: Attendance, Membership, Program and Entertainment, Standardization, Magazine Advisory, and Commodity. The president may appoint special or temporary committees as occasion demands.

1 1 1

## ST. LOUIS ASSOCIATION HOLDS CHRISTMAS PARTY

The annual Christmas Party of the Purchasing Agents Association of St. Louis was held on Saturday evening, December 9, at the Hotel Chase. Lee Bussmann acted as master of ceremonies, and entertainment was furnished by Ted Lewis and his orchestra. Among the features of the affair were numerous attendance prizes and an excellent floor show. Tickets were \$8.00 per person, with members' ladies admitted free.

Del Baker, national director, recently reported that the St. Louis Association had the second largest membership increase in the entire N.A.P.A. during the last 12 months. Joe Schinzig is chairman of the membership committee. Among the new members are: Norman O. Gebhardt, Automotive Firing Corp.; Otis Little, John Deere Plow Co.; Jack G. Sanders, Len A. Maune Co.; Norvell E. Slay, Key Company of East St. Louis, Ill.; Harry R. Watts, Grove Laboratories, Inc. Membership in the association now stands at an all-time high of 293.

1 1 1

## OKLAHOMA CITY ASSN. HOLDS LADIES' NIGHT

The annual Ladies Night dinner-dance of the Purchasing Agents Association of Oklahoma City was held on Saturday, December 2, at the Oklahoma Club.

A luncheon meeting of the association was held in the Huckins Hotel on Wednesday, December 6. The program, which was in charge of V. D. Bradshaw, featured the N.A.P.A. educational film on machine tools.

1 1 1

## "RUSSIAN AGENTS IN U. S." CINCINNATI MEETING

James H. Ratliff, Jr., a former special agent for the Army Counter-Intelligence, and at present a member of the staff of the Cincinnati Enquirer, was the principal speaker at the regular meeting of the Purchasing Agents Association of Cincinnati, held in the Netherland Plaza Hotel, November 14. Before a gathering of 200 members and guests, Mr. Ratliff gave a highly interesting talk about the activities of Russian Agents in the United States.

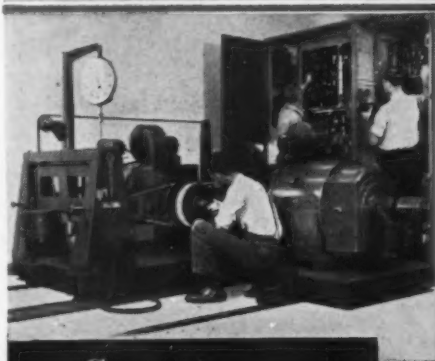
The association's annual Christmas party for members and their ladies only, was held in the Hotel Gibson ball room, Saturday, December 16.





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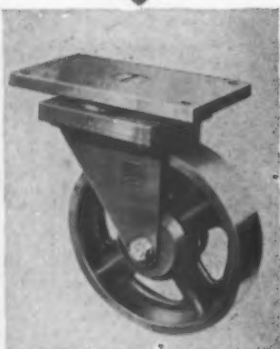
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## **Organize North Central Ohio Association**



**Officer and Directors of North Central Ohio Association. R. L. Davison, President; Charles Kates, Director; E. L. Smith, Director, Carl Schroder, Secretary-Treasurer; and C. W. Upson, Vice President**

Newest among the local purchasing agent associations is the North Central Ohio Purchasing Agents Association, which at present has 43 members, this number being exclusive of eight purchasing agents who are now members of the Akron, Columbus and Cleveland associations, whose memberships will be transferred to the North Central Ohio Association when it is affiliated with the National Association of Purchasing Agents.

Officers of the new association are R. L. Davison, Mansfield Tire & Rubber Co., Mansfield, Ohio, president; C. W. Upson, Ohio Brass Co., Mansfield, vice-president; C. V. Schroeder Dominion Electric Corporation, Mansfield, secretary-treasurer; Charles Kates, Union Malleable Manufacturing Co., Ashland, director; E. L. Smith, Westinghouse Electric Corp., Mansfield, director.

The following cities are represented in the membership: Mansfield, Ashland, Crestline, Bucyrus, Mt. Gilead, Mt. Vernon, Marion, Shelby, Plymouth Willard, Galion and Loudonville. Monthly meetings are scheduled to be held the last Tuesday of each month, and officers' meetings the second Tuesday of each month.

Holding regular meetings since last May, the association's first fall meeting was held in September in the Westinghouse plant auditorium at Mansfield, the Westinghouse Corporation acting as host. Speaker of the evening was Bruce D. Henderson, assistant to vice president, Westinghouse Electric Corp., Pittsburgh, Pa., whose subject was inventory control. At the October meeting held in the Leland hotel, Mansfield "with the usual attendance of 40 members", L. J. Ott of the Ohio Brass Co., gave a talk on his experiences in Washington with "Priorities and Proposed Government Regulations." The November meeting included

a visit to the plant of the A. L. Garber Co., Ashland, followed by dinner meeting at the Ashland Country Club.

In December, the North Central Ohio Association held its First Christmas Party and Ladies' Night at the Leland Hotel, Mansfield, with 100 couples in attendance.

1 1 1

### **ALABAMA ASSOCIATION HOLDS CHRISTMAS PARTY**

The annual Christmas Party of the Purchasing Agents Association of Alabama was held on Wednesday, December 20, at the Thomas Jefferson Hotel, Birmingham. Among the features were music, a pre-dinner social hour, favors for the ladies, prizes, and fine entertainment. D. C. Clark, chairman of the entertainment committee, was in charge of arrangements. He was assisted by Ralph Faulkner, Ray Long, Carl Miller and Ernest Crain. The party was limited to members.

Arrangements for the Fourth Annual Buyer-Seller Dinner of the Alabama Association are practically complete. This outstanding affair will be held at the Thomas Jefferson Hotel on February 8. It will celebrate the 23rd anniversary of the association. Last February more than 600 salesmen and purchasing agents attended.

1 1 1

### **NEW ORLEANS ASSN. HOLDS CHRISTMAS GET-TOGETHER**

The annual Christmas Get-Together Party meeting of the Purchasing Agents Association of New Orleans was held on the Jung Hotel Roof on Monday, December 18. Among the numerous prizes distributed were two Sugar Bowl football game tickets, both on the 50-yard line.

# Put safety and reliability into your boom supports

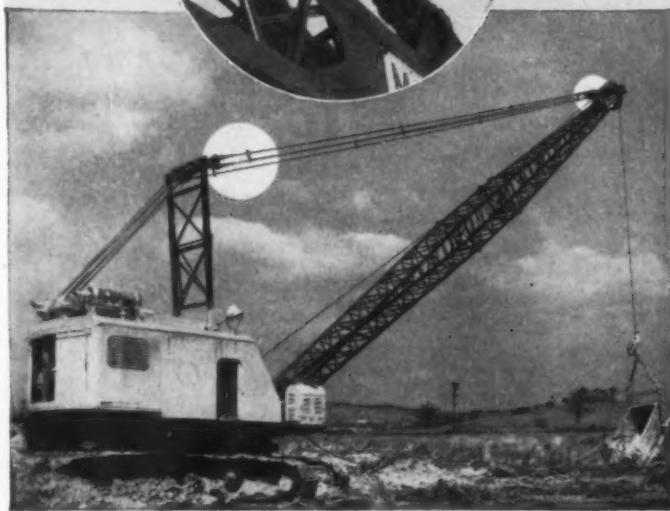
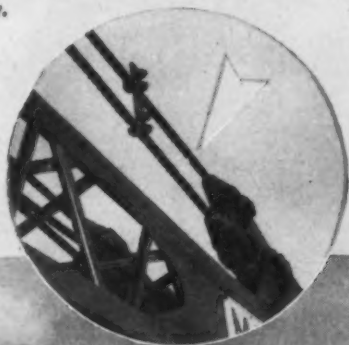
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### HERE'S THE TROUBLE SPOT

On old style boom supports, vibration was concentrated at the point where the wire rope entered the socket. For machines where vibration was *not* severe, this assembly was satisfactory. But for today's high-power, high-speed machines, a boom support with much greater resistance to fatigue is absolutely necessary.



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## ROPE ASSEMBLIES

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### HOW THE TROUBLE WAS ELIMINATED

The New Fatigue-Resistant Tiger Brand Wire Rope Assemblies are an *innovation*. They effectively combat the most severe vibration on power shovels, draglines and cranes. Note carefully the novel end thimble interwoven into the pendant. Vibration is dampened over a long section instead of being concentrated at one point.

### 2 TO 3 TIMES LONGER LIFE

The new construction has been proved in actual operation to last two to three times longer than the old assemblies — and in some cases even better results were obtained.

### INTERCHANGEABLE ON STANDARD EQUIPMENT

You can replace your old boom supports with these new assemblies quickly and easily because essential dimensions such as pin diameters, distance between ears, etc. are the same as for standard open and closed sockets. Send the coupon for complete information.

American Steel & Wire Company  
Rockefeller Building, Dept. J-11  
Cleveland 13, Ohio

Please send me complete information on your new Tiger Brand Boom Support Assemblies.

Name.....

Title.....

Company.....

Address.....

City..... State.....





# L.C.L.

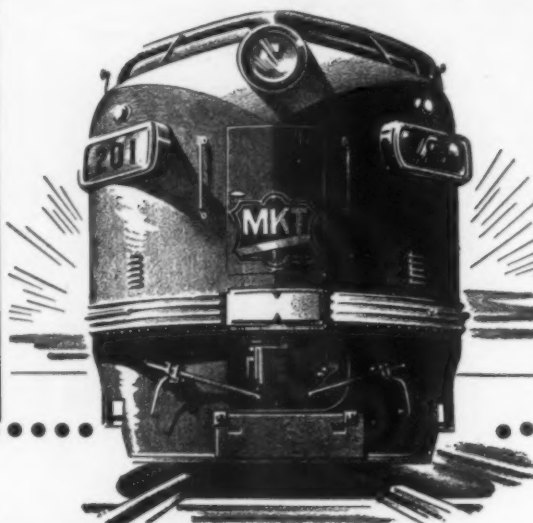
## FREIGHT MERCHANDISE SERVICE

*fast and dependable*

**via KATY KOMET**  
**and other Katy Fast Freights**

to and from  
**MISSOURI, KANSAS,  
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*speeds shipments  
whatever their size*



## COORDINATED RAIL-TRUCK SERVICE

Just phone your nearest Katy representative and tell him *what* you have to ship and *where* it's going.

From then on, Katy's safe, modern, ON-TIME L. C. L. service takes over until shipment is delivered to your customers' door.

**Free pick-up and delivery  
from and to shippers' door**

All cars are worked at our freight houses day of arrival.



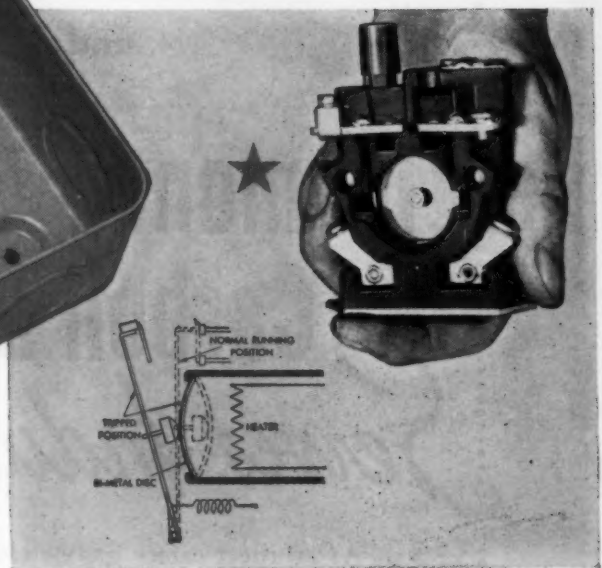
NATURAL ROUTE SOUTHWEST

Contact your  
Katy representative  
for details

42

YOU CAN BE **SURE**.. IF IT'S  
**Westinghouse**

# CUT MOTOR BURNOUTS



## with the **Life-Linestarter**\* ... positive protection against overloads

Stop worrying about the inconsistencies of ordinary overload relays.

Investigate the new Westinghouse Life-Linestarter with the bi-metal DISC overload relay which provides a positive contact pressure, with snap action. It retains its precise calibration regardless of the number of operations. It's the only relay that may be set for "automatic", "hand" or "no-stop" operation.

Positive protection is but one of the advanced features offered by the new Life-Linestarter. It's best because of its uniformity and completeness of line (NEMA sizes 0 through 4, to 100 hp, 600 volts), superior performance, ease of installation and other cost-saving advantages.

\*Trade Mark

Ask your nearby Westinghouse representative for the "inside story"—a Trans-Vision presentation—at your convenience. Or write for booklet B-4677. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-30024

**Westinghouse**  
**Life-Linestarter**

**TOMORROW'S STARTER—TODAY!**



from **paints**  
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... and a  
thousand other products  
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# Red Diamond Carbon Dioxide *Serves Industry*

As an inert safety gas or testing aid—for chilling or many other uses—Liquid's versatile Carbon Dioxide has that high degree of dependable *purity* so essential in research and production applications. As a nationwide source of supply, Liquid provides *next door service everywhere* through conveniently-located distributing points across the nation.

**CO<sub>2</sub>**

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GAS • LIQUID • SOLID

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**WORLD'S LARGEST PRODUCER OF CO<sub>2</sub>**  
Write for a free copy of "A CHART OF INDUSTRIAL USES" which suggests many of the almost unlimited ways to use valuable CO<sub>2</sub> in industry. Complete technical service available.

A National Network of Service — 28 Producing Plants  
Over 70 Distributing Points in U. S. A.  
**THE LIQUID CARBONIC CORPORATION**  
3110 South Kedzie Avenue, Chicago 23, Illinois  
Producing Plants and Warehouses in Principal Cities of the United States and Canada

## LANCASTER CLUB SEES "PARTNERS IN PURCHASING"

A regular meeting of the Purchasing Agents Club of the Manufacturers Association of Lancaster, Pa., was held on Tuesday, November 21 at Howard Johnson's. Featured was the color film "Partners in Purchasing".

The annual Christmas Party of the group was held on Tuesday, December 19, at the Arcadia Cafe ballroom. Entertainment, free cocktails, dinner, door prizes, and a grab bag were among the features. Tickets were \$5.00. Attendance was limited to visitors.

1 1 1

## SHREVEPORT ASSOCIATION HAS BUSY SCHEDULE

The November meeting of the Purchasing Agents Association of Shreveport featured a talk on the problems of purchasing by W. G. Wood, representative of the Derrick Light & Equipment Company, Fort Worth, Tex. Mr. Wood is a former purchasing agent for Continental Supply Company and discussed the problems from the point of view of both buyer and seller.

Bill Kreer, representative of H. M. Harper Company, and a former president of the Purchasing Agents Association of Dallas, entertained with a number of dialect stories. Dave Cowden, president of the local association, presided.

The annual Christmas Party was held at the Shreveport Country Club on December 9, and featured a dinner dance and floor show.

National President Night has been scheduled for January 9. Meeting dates for the association have been shifted from the first Friday night to the first Tuesday night of the month.

1 1 1

## TWIN CITY ASSN. COLLECTS TOYS FOR ORPHAN CHILDREN

The Twin City Association of Purchasing Agents repeated a successful performance of last year by collecting toys for young needy children in various Twin City orphanages at its December 13 meeting. Both new and used toys were donated and specially prepared and wrapped for distribution among the children.

Topic for the Pre-Meeting Huddle was "Priorities: Up To Date". Discussion leaders were W. O. Kjeldson, Union Brass & Metal Mfg. Co., and E. A. Lindquist, Sterling Electric Company.

1 1 1

## LEHIGH VALLEY ASSOCIATION HOLDS ANNUAL DINNER-DANCE

The Purchasing Agents Association of the Lehigh Valley held its annual dinner-dance on December 1 in the Hotel Bethlehem, Easton, Pa. More than 275 members and guests attended. The affair featured dancing to the music of Bob McClister and orchestra, and a program of professional entertainment. Ray Brodt was general chairman.

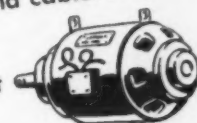


# *The right wire for the right job...*

Technological advances in many industries constantly require new developments and new applications of wire and cable. A space-saving



wire design has made possible smaller, more compact motors.

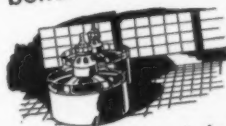


A new and better form of heat



resistance in turn prevents failure in

generators.



given a wire, a new and better clock may



be possible. New

abrasion characteristics



may mean milady's iron won't fail. A

city's safety is made more certain because a solenoid



sets new

records in performance. As simple a thing as better shielding in a wiring

harness



can be the secret of clearer radio and television reception.

Auto-Lite Engineers, drawing on their many years of automotive experience, can answer such problems.



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**THE ELECTRIC AUTO-LITE COMPANY**

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# AUTO-LITE

die castings  
plastics  
wire and cable  
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# Meet the BEMIS

## Cotton Bag Family

These Bemis Bags and bag-closing materials belong on your packaging team. They are long-time favorites in industry because they are made to give the economical service your business needs.

Besides these and many other cotton bags (not shown), Bemis also makes burlap and waterproof laminated textile bags, multiwall paper shipping sacks, cellophane bags, paper specialties, Tite-Fit Tubing and other packaging materials.



Bemis makes superior quality bags of bleached and unbleached sheeting, woven stripes and other constructions.

The wide range of Bemis sample and mailing bags and other products for industry are listed in "Pocket Guide to Bemis Products." Write for it.

Bemis Special Thread for machine closing of bags, and Mainstay Twine for hand closing of bags, are economical, time-saving—proved by experience.



Bemis dress prints, called Bemilín, are designed by top New York fashion artists. Emptied Bemilín bags are in demand for home sewing.



Sturdy osnaburg makes heavy-duty cotton bags. Especially suitable for multi-trip service.

**Get the full details of the Bemis cotton bag story from your Bemis man.**

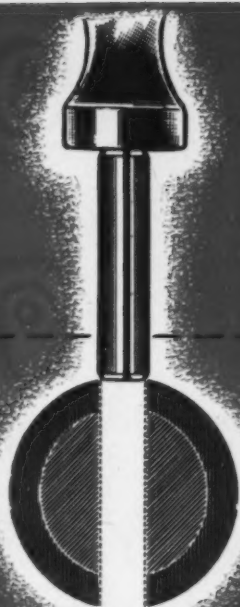
# Bemis



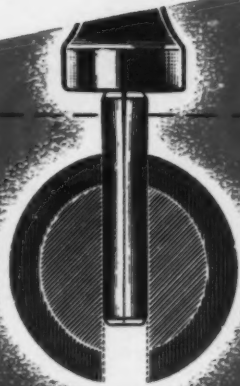
**There is a Bemis Plant or Sales Office near you—**

Baltimore • Boise • Boston • Brooklyn • Buffalo • Charlotte • Chicago • Cleveland  
Denver • Detroit • Houston • Indianapolis • Jacksonville, Fla. • Kansas City  
Los Angeles • Louisville • Memphis • Minneapolis • New Orleans • New York City  
Norfolk • Oklahoma City • Omaha • Phoenix • Pittsburgh • St. Louis • Salt Lake City  
Salina • San Francisco • Seattle • Wichita

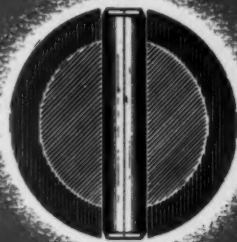
## ROLLPINS... THE NEW IDEA IN FASTENERS



Rollpins drive easily into any pre-drilled hole—chamfered ends permit rapid insertion by either hand or jig methods.



Rollpins compress as they are driven—are self-locking within normal production tolerances—eliminate reaming and peening.



Rollpins fit flush, lock permanently in place. Constant pressure against the walls of the hole holds Rollpins firmly in position.

## How much can Rollpins save on your production line?

Here's important information on Rollpins—the amazing new fasteners that eliminate slow, expensive reaming, peening, and machining operations. Just imagine the cost-cutting possibilities provided by a single fastener with such wide design and application flexibility that it can replace tapered pins, grooved pins, or straight pins. Investigate the savings Rollpins offer *your* product.

In the short period since their introduction, manufacturers are already using Rollpins as steel fastening pins holding pulleys and gears to shafts; as pivot or hinge pins, clevis pins, cotter keys, shafts, and locating dowels... to provide lower-cost, simplified, vibration-proof assemblies.

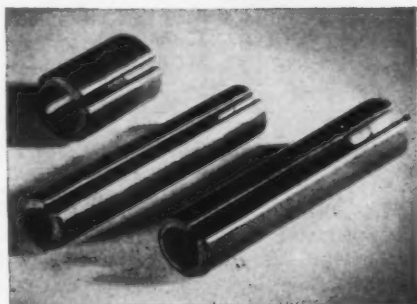
Rollpins require no special installation skills... readily

replace your present fastener... exceed the sheer strength of a cold-rolled pin of equal diameter. Rollpins stay tightly in place until deliberately removed with a pin punch—can be used over and over again.

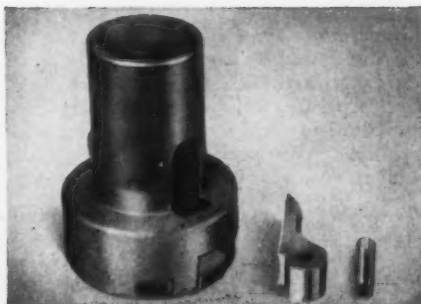
For complete information on Rollpins and their almost unlimited money-saving applications write to Elastic Stop Nut Corporation of America, 2330 Vauxhall Road, Union, New Jersey.



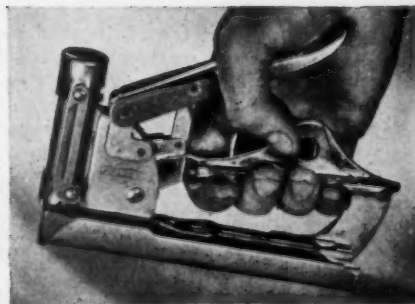
### ELASTIC STOP NUT CORPORATION OF AMERICA



Rollpins are made from either Carbon Steel or Stainless Steel and are readily available from stock in diameters from 1/16 inch to 1/2 inch and in a broad range of standard lengths.



Rollpins are used to replace a hardened, ground tapered pin in this feed tube finger clutch assembly—stand up to flexing and shock more than 2,400 times an hour.



Four Rollpins are used in this Hansen tacker as pivots. Self-retaining, they eliminate headed rivets and bolts... simplify maintenance operations... provide a flush fit.



# SUPERIOR

in more  
than name

To make every gray iron casting meet your exact specifications is the aim of Superior Foundry's complete staff of production casting experts. Such high standards require organization, experience, modern equipment and never-ceasing "Quality Control."



This fire pot section must be cast of high thermal shock resistant iron to withstand sudden heating and cooling without warpage, growth or distortion. Must be cast close to tolerance as is used without dimensional machining.

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Gray Iron Production Casting



Complete Electric Furnace Process



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THESE are just a few of the modern facilities that enable Superior to produce castings ranging from 1/2 lb. to 1200 lb. in any quantity and to your particular specifications. Whether you want straight cupola gray iron or electric furnace iron castings with or

without alloys, you'll discover that Superior Foundry's complete metallurgical control assures uniform grain structure, adherence to your specifications and a clean, smooth finish. Bring your production casting problems to us today.

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### JOHNS-MANVILLE OFFICIAL GUEST AT CHICAGO MEETING

A regular meeting of the Purchasing Agents Association of Chicago was held on Thursday evening, December 14, at the Hotel Sherman. Principal speaker was Laurence C. Hart, vice president for relationships, Johns-Manville Corporation. Mr. Hart is a specialist in sales problems and management, as well as human relations, and has been widely active in industry affairs. His topic was "Human Relations in Business".

1 1 1

### NEWBERY TALKS ON N.A.P.A. AT FORT WORTH MEETING

Ben R. Newbery, former president of the National Association of Purchasing Agents was guest speaker at the November meeting of the Purchasing Agents Association of Fort Worth. Mr. Newbery discussed the progress of the N.A.P.A. and the part local associations can play in its development.

The annual Christmas Party of the association was held at the Colonial Country Club on December 18.

New members of the association are: B. W. Patton, Cook Drilling Company; Charles W. Zartman, Rectorwell Equipment Company; and Karl E. Atteberry, Lind Paper Company.

1 1 1

### DALLAS ASSN. MEETING

The November meeting of the Purchasing Agents Association of Dallas, held at the Melrose Hotel, featured a talk by Stanley W. Foran, director of public relations and advertising for Dick Price Motors. Mr. Foran's topic was "The Fifth Freedom—Freedom to Buy".

1 1 1

### ROCHESTER ASSOCIATION HAS ANNUAL CHRISTMAS PARTY

The annual Christmas Party of the Purchasing Agents Association of Rochester was held on Wednesday evening, December 20 at the Rochester Club. The affair featured music, entertainment, and the presentation of "exchange gifts" and door prizes to every member present. Attendance was limited to the membership.

The second "Shop Talk" session of the association was held on Thursday noon, December 14, at the Chamber of Commerce. It featured a discussion on aluminum and copper—how to purchase and use them, records, in-plant controls.

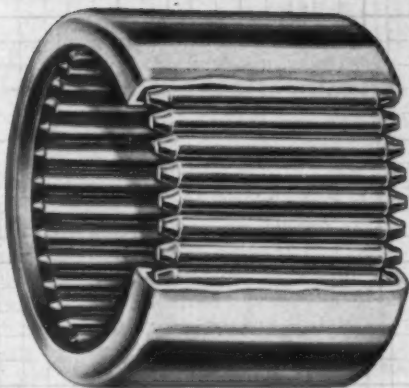
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### M.P.A.C. HOLDS ANNUAL CHRISTMAS AFFAIR

The annual Christmas Party of the Metropolitan Purchasers Assistants Club was held in the Midston House, New York, N. Y., on Tuesday evening, December 12. Following dinner a full program of entertainment entitled "Holiday House Party" was presented. Tickets were \$5.50 per person.

**TORRINGTON** *NEEDLE* **BEARINGS**

**stand up  
in rugged service**



A full complement of small diameter rollers spread radial loads evenly over a large area, roll easily under the shock. This feature gives Torrington Needle Bearings a higher capacity in proportion to their size than any other anti-friction bearing, and assures long, satisfactory service life in the toughest applications.

Let our engineers help you build greater staying power into your products with Torrington Needle Bearings.

**THE TORRINGTON COMPANY**

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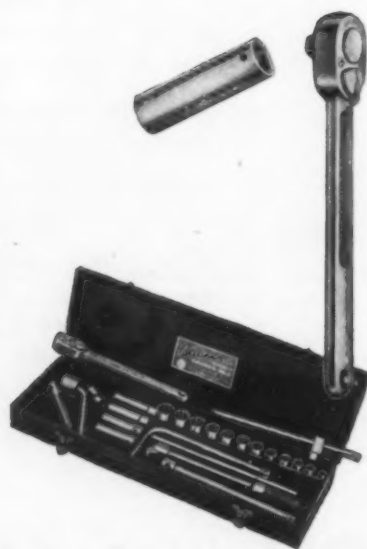
**TORRINGTON** *NEEDLE* **BEARINGS**

NEEDLE • SPHERICAL ROLLER • TAPERED ROLLER • STRAIGHT ROLLER • BALL • NEEDLE ROLLERS

## USE THE RIGHT TOOL FOR THE JOB . . .



*\*  
a Billings  
will do it  
better!*



\*VITALLOY®  
SOCKET SETS & PARTS

Ask your  
BILLINGS DISTRIBUTOR  
He'll tell you why!

SR2

THE BILLINGS & SPENCER CO. HARTFORD 1, CONN. U.S.A.

## DIFFICULT TO FORECAST WHERE PRICES ARE GOING

"With conditions as uncertain as they are today, it is exceedingly difficult for any one to come near to making a forecast as to where prices are going in the next six months or year", stated Roland M. Brennan, Purchasing and Contracting Officer, District of Columbia, Washington, D.C., in report to the Commissioners, Budget Officers and Heads of Departments, reviewing price conditions and trends. "We are not operating under a peacetime economy, nor a war economy. The economy today has been referred to as a "Garrison" economy. No one knows where prices and wages are going. All-over price controls appear to be out of the picture for the present. There has been some discussion of imposing selective price controls at the raw material level which, of course, could influence the selling price of fabricated and manufactured goods. Business men in quoting prices on future deliveries must speculate in selling to the same extent that purchasing agents must take a chance in buying."

In the course of his review, he stated that all indications point to a rise in the early part of 1951 due to increased wages expected in the steel industry.

1 1 1

## PHILADELPHIA ASSN. HOLDS FATHER AND SON NIGHT

The Annual Meeting and Father and Son Night of the Purchasing Agents Association of Philadelphia was held in the Bellevue-Stratford Hotel on Thursday, December 14. The meeting featured a full hour of entertainment of interest both to the boys and the adults. The usual Christmas bags and door prizes were distributed. Following an established custom, a special group of fifty boys was invited as guests of the association.

1 1 1

## "TODAY'S ECONOMIC PROBLEMS" R. I. MEETING SUBJECT

A regular meeting of the Rhode Island Purchasing Agents Association was held in the Narragansett Hotel, Providence, on Monday, November 27. Herbert N. McGill, editor of McGill Commodity Service, Inc., and a member of the consulting staff of the National Association of Purchasing Agents, was principal speaker. Mr. McGill's topic was "Today's Economic Problems".

A commodity forum preceded the meeting.

Among new members of the association are: Millard G. Dorcus, General Fittings Company; Richard G. Dunn, Real Reel Corp.; John J. Reardon, Steel Sales & Service, Inc.

The association's annual Christmas Party was held at the Sheraton-Biltmore Hotel on Friday, December 15. Free cocktails were served at 5:30. A novel entertainment program was presented following dinner. Tickets for members were \$3.50, for guests \$7.00.

(Please turn to page 220)



# THE Udylite 'LUCITE'

## PLATING CYLINDER

6 WAYS  
BETTER



1. GREATER ABRASION RESISTANCE

2. 30% MORE PERFORATED AREA

3. "DEEP-DIP" DESIGN

4. STRONGER CONSTRUCTION

5. LOWER INITIAL COST

6. OPERATES THROUGH ENTIRE CYCLE (ACID OR ALKALINE)

Consider the advantages of the Udylite 'Lucite' Plating Cylinder. This cylinder is made of heat resistant 'Lucite'—which offers greater abrasion resistance. And the shell is *mortised* and *cemented* into the cylinder heads—with door openings machined to a very close tolerance, providing perfect fit. Door clamps are designed to give maximum support to the door panel yet open easily and freely. Oversized superstructure with "Deep-Dip" design allows the cylinder to hang deep in the solution.

This 'Lucite' cylinder can be operated through the complete cycle—either acid or alkaline. And most important—the Udylite 'Lucite' Plating Cylinder is offered in 4 sizes with perforations  $\frac{1}{16}$ " Diameter and Larger.

Call in your Udylite Technical Man today for full information concerning the Udylite 'Lucite' Plating Cylinder or write direct to The Udylite Corporation, Detroit 11, Michigan.

PIONEER OF A BETTER WAY IN PLATING

THE  
**Udylite**

**CORPORATION**

DETROIT 11, MICHIGAN

# SPECIAL WASHERS

To Your Specifications  
**ANY SIZE • ANY METAL • ANY QUANTITY**  
 12,000 Sets of Tools are at your disposal. More than a quarter-century of experience in designing and making Special Washers.

**THE MASTER PRODUCTS CO.**  
 6400 PARK AVE. • CLEVELAND 5, OHIO

## AL HAYES STOPS OFF TO TALK AT HAWAII ASSN. MEETING

F. Albert Hayes, vice-president for purchasing of Bigelow-Sanford Carpet Company, paused during his recent round-the-world-trip to address the November 24 meeting of the Purchasing Agents Association of Hawaii. Mr. Hayes, a past president of the National Association of Purchasing Agents, had been investigating wool market conditions in the British Isles, France, Italy, India, Pakistan, Australia and New Zealand.

Mr. Hayes told the group that world conditions did not appear favorable to competitive production. He revealed that his activities had included a study of synthetic materials which would be suitable for use in supplementing wool and jute. He also commented on general economic and political conditions as he observed them during the trip.

1 1 1

## BRITISH COLUMBIA ASSN. HEARS TALK ON DRILLING

Reg. McWilliams, contract manager, Boyles Bros. Drilling Co. Ltd., was guest speaker at the November meeting of the Purchasing Agents Association of British Columbia held in the Hotel Vancouver, Vancouver. Mr. McWilliams gave the members an insight into the operation of diamond drilling and outlined the changes in techniques and costs that have occurred during the last few years.

Jack Borrowman, Neolite Ltd., was introduced as a new member.

### Vancouver Island Activities

Alf Mendum, B. C. Cement, and Geoff Arnott, Canadian Pacific Steamships, conducted a round table discussion on the subject "Have You A Problem?" at the regular November meeting. Members cooperated by bringing up various problems, and an interesting discussion was held. The December meeting was moved forward from the 8th to the 1st in order not to conflict with the Vancouver Association's annual Christmas Party.

1 1 1

## SYRACUSE & CENTRAL N. Y. ASSN. HOLDS ANNUAL PARTY

The twenty-sixth annual Christmas Party of the Purchasing Agents Association of Syracuse and Central New York was held in the main ballroom of the Onondaga Hotel, Syracuse, on Thursday, December 14.

Dinner was served at 6:30 following a cocktail hour. A floor show was presented after the dinner. Tickets were \$5.00 each.

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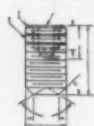
## TRI-STATE ASSOCIATION HEARS CHAMBER DIRECTOR

A regular meeting of the Tri-State Purchasing Agents Association was held at the Charleston Airport, Charleston, West Virginia, on Tuesday, December 12. Guest speaker was Charles Hodges, managing director of the Charleston Chamber of Commerce.

(Please turn to page 224)

## New ZIP-GRIP® Self-Locking SET SCREWS

used on a new  
**Nationally Known Washing Machine!**



A puzzling set screw problem on a new nationally known Washing Machine was successfully solved with ZIP-GRIP® Self-Locking Set Screws. In less than a year, over 100 manufacturers have adopted ZIP-GRIP® for the same reason. Perhaps ZIP-GRIP® is the answer to your puzzling set screw problems, too.

Send for Free ZIP-GRIP® Action Demonstrator that shows exclusive, Contra-Thrust Action; we'll also include ZIP-GRIP® Data Sheet and tell you how to get Free Engineering Test Samples. Write today.

\*PAT. PENDING



SET SCREWS

**Set Screw & Mfg. Co.**

142 Main St. Bartlett, Ill. (Chicago suburb)

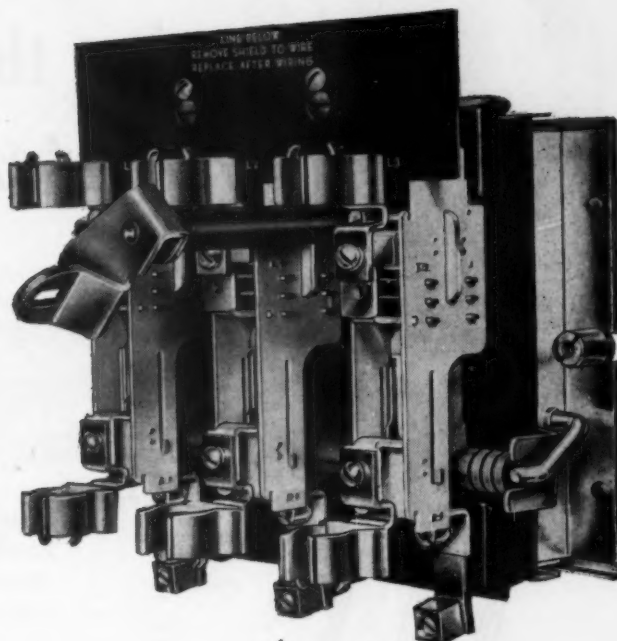
We specialize in Solving Puzzling Set Screw Problems.

# NOW...an ALL-NEW Type A Safety Switch for modern high-capacity distribution systems...

## TRUMBULL'S HCI

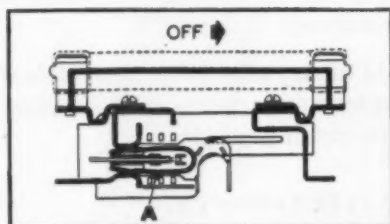
### HIGH CAPACITY INTERRUPTER

Unusually high interrupting capacity... "circuit-breaker" action breaks heavy loads quickly, safely. Extremely high momentary current capacity... withstands heavy short circuits without damage. 30-, 60-, 100-ampere sizes.

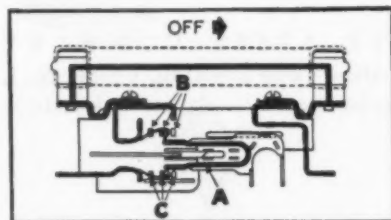


### Here's How...

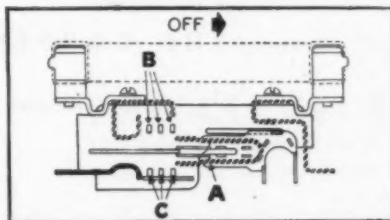
#### HCI's "Circuit-Breaker" Action Works



1. Switch closed. Spring-loaded sliding contact (A) fully inserted between stationary contacts. Heavy line is current.



2. Sliding contact being withdrawn. The two arcs repel each other, are drawn against grid pins (B) and (C), which break and cool them.



3. Contact fully withdrawn. Trumbull's unique "Circuit-Breaker" action has effectively extinguished the arcs.

#### CHECK THESE ADDITIONAL SPACE- SAVING, TROUBLE-PREVENTING, LIFE-LENGTHENING FEATURES

Center-front operation permits close ganging.

Front fusing allows compact box, yet gives ample wiring space.

No exposed live parts when switch is OFF and door is open.

Handle interlock.

Clear ON and OFF markings both inside and outside.

No dead center—roller-cam action (multiplying linkage design with powerful spring) throws switch to full OFF and ON.

Poles are self-contained switching units for easy replacement.

Silver-plated current-carrying parts prevent oxidation... give low-resistance contact.

Insulating parts made of linen melamine, light, strong, arc-resisting.

Enclosed operating mechanism (on 60- and 100-amp. sizes) prevents wire chafing.

Interior removable for wiring ease.

Underwriters' approval throughout.

For more information about Trumbull's all-new HCI Safety Switch, write for your free copy of Bulletin TEC-10 today. THE TRUMBULL ELECTRIC MANUFACTURING COMPANY, Plainville, Connecticut.

**Men Who Observe the Best Electrical Practice Make It a Practice to Use**

## TRUMBULL ELECTRIC

TRUMBULL'S TRAINLOAD OF NEW PRODUCTS





# 39% LESS REJECTS now that they're made from *Carpenter* Stainless Tubing



When they first made collapsible handles for uranium detectors, inspectors rejected 40% of the finished units because of inaccurate slip-fits between sections. Costs went haywire and needed equipment could not be delivered on time.

Now handles, with perfect slip-fits between sections, are made from Type 304 Carpenter Stainless Tubing, at a reject rate of only 1%. Exceptional wall uniformity in various tube sizes makes possible mass production of a previously "fussy" job.

If you would like to find ways to do tubing jobs better, and at less cost, it will pay you to use Carpenter's experience with Stainless Tubing. Drop us a line and tell us about your job.



## SELECTION AND FABRICATION DATA Yours FOR THE ASKING

The new Carpenter Stainless Tubing Slide Chart contains useful data on analyses, physical properties, economical bending radii, standard sizes, etc. A note on your company letterhead will start a Slide Chart on its way to you.

**THE CARPENTER STEEL COMPANY**  
Alloy Tube Division, Union, N. J.

Export Department: Woolworth Bldg., New York 7, N.Y. "CARSTEELCO"

*P.A.s tell us this is  
a big help to them!*

# Carpenter

## STAINLESS TUBING



— guaranteed on every shipment

Stocked by Distributors in Most Major Cities



Here's how to

# SAVE TIME on Milling Operations

END MILLS		Time per slot	Number of complete slots before changing mills
End Mills previously used	Number of passes necessary to mill slot		
Cleveland End Mills	24 to 32	9 min.	4-1/2
	10	1-1/6 min.	27

The above figures, taken from an actual test on a roughing operation in a customer's plant, proved that **Cleveland** End Mills save time and money in cutting slots in a cast steel mold. ♦ There may be an opportunity for similar economies in *your* milling operations. Let a **Cleveland** Service Representative make a survey, without cost or obligation. Contact our nearest Stockroom, or . . .

Telephone Your Industrial Supply Distributor



## THE CLEVELAND TWIST DRILL CO.

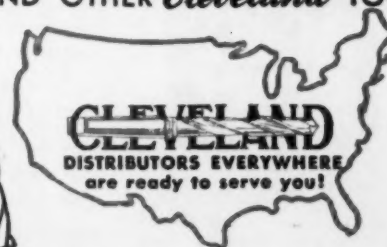
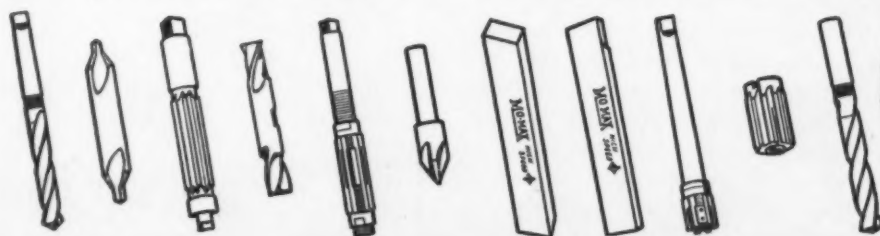
1242 East 49th Street

Cleveland 14, Ohio

Stockrooms: New York 7 • Detroit 2 • Chicago 6 • Dallas 1 • San Francisco 5 • Los Angeles 58

E. P. Barrus, Ltd., London W. 3, England

ASK YOUR INDUSTRIAL SUPPLY DISTRIBUTOR FOR THESE AND OTHER **Cleveland** TOOLS





**"Drive thy business —  
let not that drive thee."**

—Ben Franklin's Almanac, 1757

These days thee must work a month for the taxgatherer before thee begins to work for thyself. Keep a firm hand on the wheel of savings to bolster thy "nett after taxes."

—Acme Steel Notebook, 1950\*

A business steered by the guideposts of thrift and efficiency seldom goes wrong. Helping business obtain greater thrift and improved efficiency has been the reason for Acme Steel methods and Acme Steel products for 70 years.

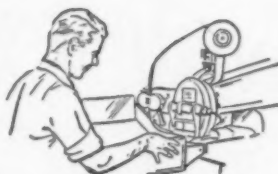
We are now helping more than 50,000 customers, including almost every industry, obtain these benefits, particularly in departments and operations concerned with packaging, shipping and materials handling.

For detailed information about Acme Steel products, write on your business letterhead for free booklets on the specific products in which you are interested.

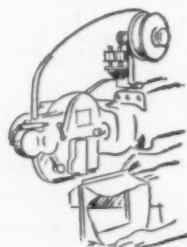
#### ACME STEEL COMPANY

Dept. P-11, 2838 Archer Avenue, Chicago 8, Illinois  
There are 46 Acme Steel service offices in the U.S. and Canada.

*\*The sagest maxims of Ben Franklin, together with modern parallels, appear in Acme Steel Notebook, 1950. We have a free copy for you. Just ask for it.*



Acme-Morrison Metal Stitchers aid increased production of gas ranges by speeding assembly of parts.



Metal-to-metal or metal-to-other materials—just stitch it like paper with Acme-Morrison metal stitchers.



Who "owns" Acme Steel? Our 1949 annual report showed 7,538 stockholders—2,730 women, 2,705 men, 1,612 joint accounts and 491 corporations and institutions. Acme Steel stockholders have increased approximately 20 per cent in number in the past two years.

ACME STEELSTRAP flat steel strapping and ACME UNIT-LOAD carload bracing BAND, SEALS and TOOLS • ACME SILVERSTITCHER machines • ACME SILVERSTITCH stitching wire • ACME-MORRISON METAL STITCHERS and BOOK STITCHERS • ACME-CHAMPION BAG STITCHERS • ACME HOT AND COLD ROLLED STRIP STEEL • ACME GALVA-BOND steel slot stock for Venetian blinds • ACME STEEL SPECIALTIES, including hoops, corrugated fasteners, nail-on strapping and other container reinforcements • ACME STEEL ACCESSORIES—snips, cutters, punches, tool mounts, reel stands, coil holders, coil trays.

#### PATERSON P. A. CLUB ELECTS NEW OFFICERS

The Purchasing Agents Club sponsored by the Greater Paterson (N. J.) Chamber of Commerce, recently elected new officers for the coming year.

They are: L. F. Spencer, Susquehanna Railroad, chairman to succeed George Mealey of Manhattan Shirt Company; John Koment, Jr., First National Bank and Trust Company, secretary; Russell Birchall, Sam Braen and Sons, program chairman.

1 1 1

#### PITTSBURGH ASSOCIATION HAS ANNUAL CHRISTMAS PARTY

The annual Christmas Party of the Purchasing Agents Association of Pittsburgh was held in the Pittsburgh Athletic Association on Friday, December 15. A cocktail hour was held preceding dinner. Features of the affair included distribution of door prizes, dancing to Homer Ochsenhirt's orchestra, and cards. The price was \$7.50 per plate.

1 1 1

#### PUBLICITY FIRM OFFICIAL MONTREAL ASSN. SPEAKER

A regular meeting of the Purchasing Agents Association of Montreal was held on Tuesday, December 19, at the Mount Royal Hotel. Guest speaker was Nolin Trudeau, vice-president of Publicity Service Limited. Mr. Trudeau's subject was "There's More to It Than Meets the Ear." The affair was designated "Salesmen's Night" and a large number of guests from the sales profession attended.

1 1 1

#### INDIA INCREASES EXPORT DUTY ON BURLAP

An increase of the export duty on burlap from 750 rupees to 1500 rupees per long ton was recently announced by the Indian Government, according to information received from New Delhi by the Office of International Trade, U. S. Department of Commerce. The action was taken simultaneously with the introduction of a bill in the Indian Parliament to approve the increase, and to give the Indian Government authority to impose an export duty on any commodity. The purpose of the higher duty is to provide more revenue and to bring the landed cost of burlap in New York City, purchased at Indian ceiling prices, about in line with New York market prices.

1 1 1

#### NEW STANDARD FOR PLASTIC TABLEWARE

Commercial Standard CS173-50, Heavy-Duty Alpha-Cellulose-Filled Melamine Tableware, is announced by The Commodity Standards Division of the Department of Commerce, Washington, D. C. The standard includes requirements for thickness, finish and resistance to boiling and heat.



# B.F. Goodrich



**Don't read  
this ad—**

**if you're an industrial  
tire and wheel expert!**

**I**F you *aren't* an industrial tire and wheel expert, The B. F. Goodrich Company wants to put a trained man at your service—without obligation. Your local BFG representative has been specially trained to analyze industrial tire operations, and to make impartial recommendations regarding size, type, tread compound, care and maintenance. These recommendations are valuable to you. In many cases, they have brought about a direct savings in tire and wheel costs of up to 50%! The recommendations this tire and wheel analysis man makes

are impartial and unbiased because the B. F. Goodrich line is a *complete* line of tires: 14 types, 7 tread compounds and a full range of sizes.

Call your B. F. Goodrich man today. Let him survey your operation . . . study loads, hauls, equipment, hauling surfaces and floors. Then let him make his recommendations. You'll be amazed at the savings you can realize. *A similar program is available for the manufacturers of industrial hauling equipment.*



Write for full details of the

**ANALYSIS PLAN** at no obligation.



The B. F. Goodrich Co.  
Department TW-81  
Akron, Ohio

Please give me additional information on your Tire and Wheel Analysis plan.

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

# Personalities



## IN THE NEWS

**A. T. Jenkins** has been named Purchasing Agent of Western Gear Works, at the Lynwood, Calif., plant. He is a graduate of Washington State College, and a



**A. T. Jenkins**

member of the Purchasing Agents Association of Los Angeles. He was with the Axelson Manufacturing Company for eleven years as Purchasing Agent of the aircraft procurement division.

**Wilmington, Del.**—E. I. du Pont de Nemours and Company (Inc.). George H. Loving has been appointed director of sales of the company's explosives department. He succeeds Charles B. McCoy who was transferred to the electrochemicals department as assistant general manager.

**C. R. Brown** has been appointed Purchasing Manager for the Canton Division of the E. W. Bliss Company, at Canton, O. Mr. Brown returns to Bliss after a brief association with the Robert Carter Company of Toledo, O. Prior to that, he was connected with Bliss for 17 years, serving the company at its Brooklyn, Toledo, Cleveland, and Salem plants.

**Edward G. Johnson**, since 1941 Assistant Purchasing Agent for Laclede Steel Company, St. Louis, Mo., has been appointed Purchasing Agent. He became associated with the company in 1933 at the Alton, Ill. works, where he served in various capacities until his transfer to the general offices in St. Louis in 1941.

**D. L. Miller** has been appointed Purchasing Agent at Northrop Aircraft, Inc., Hawthorne, Calif., according to an announcement by J. W. Hinchcliffe, Director of Materiel. Mr. Miller has 22 years of experience in the commercial and aircraft procurement field. During and since the war he was associated with North American Aviation in various plants throughout the country.

**Clarence H. Brunemann** has been named Purchasing Agent for Hamilton County, Ohio, with headquarters in Cincinnati. He succeeds Cecil A. Patty, resigned.

**Wayland P. Morse**, General Purchasing Agent of the Borden Company, New York, N. Y., is shown in the accompanying picture (right) being congratulated



by the company president, Theodore G. Montague on the completion of 40 years' service with Borden. Mr. Morse was honored at a recent meeting of Borden's Quarter Century Club.

**C. D. Collier** has been promoted from Purchasing Agent to Director of Materiel for the Texas Engineering and Manufacturing Company, Fort Worth, Tex.

**Van Courtlandt Short** has been promoted to Purchasing Agent of United States Lines, New York, N. Y. He succeeds the late Albert de Smedt.



**Van Courtlandt Short**

Mr. Short has been with the company for 35 years, mostly in passenger work, but he has also been closely associated with operation, management and organization. When the Maritime Commission's long-range ship construction program got under way in 1936 he devoted much time to plans for new passenger and freighter tonnage for the United States Lines. He served on the construction committees for the liners Manhattan, Washington and America.

**Emmett J. Sharkey** has been named Assistant Purchasing Agent. He has been with the company for 21 years, all in the purchasing department.

**Warren Frebel**, formerly Purchasing Agent for Majestic Radio & Television, division of The Wilcox-Gay Corporation, Brooklyn, N. Y., has been appointed Purchasing Director.

**W. R. Bobisink** and **Morris Siegel** have been named Assistant Purchasing Directors. Mr. Bobisink has been with the Garod-Majestic organization for three years, and Mr. Siegel has been with the company for nine months. **James E. Mahoney, Jr.** and **Paul Friedman** have joined the purchasing staff as buyers.

(Please turn to page 228)

# Truarc E-Rings Improve Performance of Detachable Chain...5 ways!

COTTER PIN chain



TRUARC RING chain



In every possible kind of test—tensile, impact, shock, speed—detachable chain made with Truarc Rings outperforms chain equipped with cotter pins! That's what Atlas Chain & Manufacturing Co., Philadelphia, discovered, after pioneering chain with Truarc E-Rings. Improve your own product with Truarc Rings! Wherever you use machined shoulders, collars, cotter pins, bolts, nuts, screws, snap rings...a Truarc Ring will do the job better: improve performance, cut unit cost, save space and weight, eliminate parts, permit use of stock sizes, eliminate skilled labor operations, simplify maintenance.

Truarc Rings are precision-engineered. Quick and easy to assemble, disassemble. Give a never-failing grip. Can be used over and over again.

Find out what Truarc Rings can do for you. Send your blueprints to Waldes Truarc engineers, for individual attention, without obligation.

Waldes Truarc Retaining Rings are available for immediate delivery from leading ball bearing distributors throughout the country.

**1. STRONGER.** Average 30% higher static thrust strength than cotter pins. Resilient E-Ring reinforces links against exceptional side stress—resilient spring is most efficient means of damping vibration.

**2. GREATER SHOCK RESISTANCE.** Higher shock strength ratios than cotter pins, due to greater contact surface plus spring reaction for damping moment of shock. Circular movement of ring in groove relieves shock surface loadings—instead of resisting rigidly as with cotter pins in fixed holes.

**3. HIGH SHOULDER.** High effective bearing shoulder extends practically all around pin, and is geometrically perfectly proportioned to link diameter.

**4. RE-USABLE.** No part of E-Ring fatigues and breaks off, as with ends of re-used cotter pins. Ring removes easily with screwdriver.

**5. REDUCES ACCIDENTS.** Does not protrude to catch onto clothing. No sharp-pointed ends to produce electrical brush discharge and resultant fire and explosion hazard in mines and mills.

SEND FOR NEW CATALOG

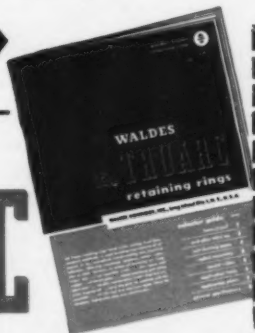


**WALDES  
TRUARC**

REG. U. S. PAT. OFF.

**RETAINING RINGS**

WALDES KOHINOOR, INC., LONG ISLAND CITY 1, NEW YORK  
WALDES TRUARC RETAINING RINGS ARE PROTECTED BY THE FOLLOWING PATENT NUMBERS: U. S. PAT. 2,392,948;  
2,420,921; 2,411,761; 2,487,803; 2,487,802; 2,491,306 AND OTHER PATS. PEND.



Waldes Kohinoor, Inc., 47-16 Austel Place  
Long Island City 1, N. Y.

P-013

Please send Selector Guide catalog C4K-W  
Waldes Truarc Retaining Rings.

Name \_\_\_\_\_

Title \_\_\_\_\_

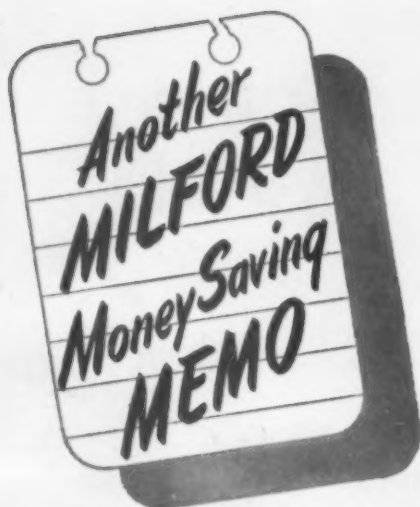
Company \_\_\_\_\_

Business Address \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_







## REDUCE WASTE IMPROVE WORK SAVE TIME

WITH

## MILFORD

### Profile Saw Blades

MILFORD Profile Saw has long been accepted by tool and die makers as a basic tool for internal or external contour sawing. Originated by MILFORD, this narrow blade for contour cutting has milled, precision-set teeth — follows a straight or curved line fast and accurately. Your MILFORD Distributor can serve you from stock.

This booklet tells you more. Get it and other money - saving MILFORD literature from your Distributor today, or write us direct.



### THE HENRY G. THOMPSON & SON CO.

Saw Specialists Exclusively For Over 70 Years  
NEW HAVEN 5, CONNECTICUT, U.S.A.

Profile and  
Band Saw Blades



Rezisor & Duplex  
Hack Saw Blades

SOLD THROUGH SELECT INDUSTRIAL DISTRIBUTORS

David H. Cummings has been named State Purchasing Agent of Illinois, with headquarters at Springfield. He replaces William J. McKinney who resigned recently to enter private business. Mr. Cummings, a banker and auto parts distributor, has been chairman of the state police merit board for the past 15 months.

Charles M. Healey, Jr., Purchasing Agent for the City of Springfield, Mass., was the principal speaker at a recent Rotary Club meeting in Holyoke, Mass. Mr. Healey discussed the merits of a centralized municipal purchasing system.

Raymond Kline has been appointed Purchasing Agent of the American Insulator Corporation, New Freedom, Pa. He succeeds Leroy Curry who has resigned after 30 years' service in the position.

E. E. DeWitt has been appointed Purchasing Agent of the Alexandria Hotel, Los Angeles, Calif.

John Falkowski has been promoted to Assistant Purchasing Agent of Hamilton Standard Division of United Aircraft Corporation. He joined the company in 1937 and was transferred to materials control in 1938. He entered purchasing in 1940 and was promoted to buyer in 1943. In 1946 he was promoted to supervisor of schedules and follow-up.

Harry F. Matthies has been named Assistant Purchasing Agent for Elgin National Watch Company, Elgin, Ill., according to an announcement by H. E. Corr, Purchasing Agent. He will be in charge of procuring materiel, supplies, machinery and tools. Mrs. Marjorie Krich will continue as Assistant Purchasing Agent in charge of the accessory group. Mr. Matthies joined Elgin in 1945.

## AMONG THE COMPANIES YOU BUY FROM

Cleveland, O.—The Carpenter Steel Company. Harold R. Potter has been appointed sales manager for the Cleveland district. He succeeds James S. Bailey, who has been named assistant to the vice-president in charge of sales.

Dearborn, Mich.—Dearborn Gage Company. Walter C. Foote has been appointed sales manager.

Detroit, Mich.—Worthington Pump and Machinery Corporation. Clarence S. Wentworth has succeeded Wilbur R. Leopold as manager of the company's office here. Mr. Leopold has been appointed assistant to vice-president T. Cruthers.

Drexel Hill, Pa.—The Reliable Spring & Wire Forms Company. C. E. Etzler, 804 Roberts Avenue, has been appointed district sales engineer for eastern Pennsylvania.

Chicago, Ill.—Inland Steel Company. The railroad division and pig iron and coal chemicals division of the company's sales department have been consolidated in charge of John J. Davis, Jr. Mr. Davis has been sales manager of the separate divisions.

New York, N. Y.—E. C. Atkins and Company. Howard E. Jenkins has been appointed manager of the company's eastern territory with headquarters here. He was



Howard E. Jenkins

formerly assistant sales manager and assistant to the director of sales for the Nicholson File Company. Mr. Jenkins will direct marketing and selling activities in New England, New York, Pennsylvania, Delaware, Maryland, and the District of Columbia.

Utica, N. Y.—Utica Drop Forge & Tool Corporation. Thomas R. Hughes has been appointed vice-president and sales manager. Mr. Hughes came with the



Thomas R. Hughes

company in 1940 as a production control man and progressed through the manufacturing side of the business to superintendent of the shop. From there he was moved into sales.

Pittsburgh, Pa.—National Electric Products Corporation. Vincent P. Oatis, Jr., has been named assistant manager of electrical busway and underfloor raceway sales. He will assist C. F. Meyer, manager of busway, and J. H. Gross, manager of underfloor raceways.

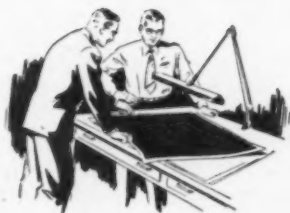
Lockland, O.—Philip Carey Mfg. Company. Albert E. Binger, Jr., has been appointed industrial sales manager. Mr. Binger joined Carey in 1949 and has been sales manager of the roofing and paint department.

(Please turn to page 230)

**Do The Job Best—  
With The Best Tubing  
For The Job – Contact**

# GLOBE

**A Leading and  
Specialized Producer  
of Steel Tubes**



Globe engineers are at your service to assist in the selection of tubing to help you improve your product — increase production — lower your costs.

*Globe Steel Tubes Are Available In:*

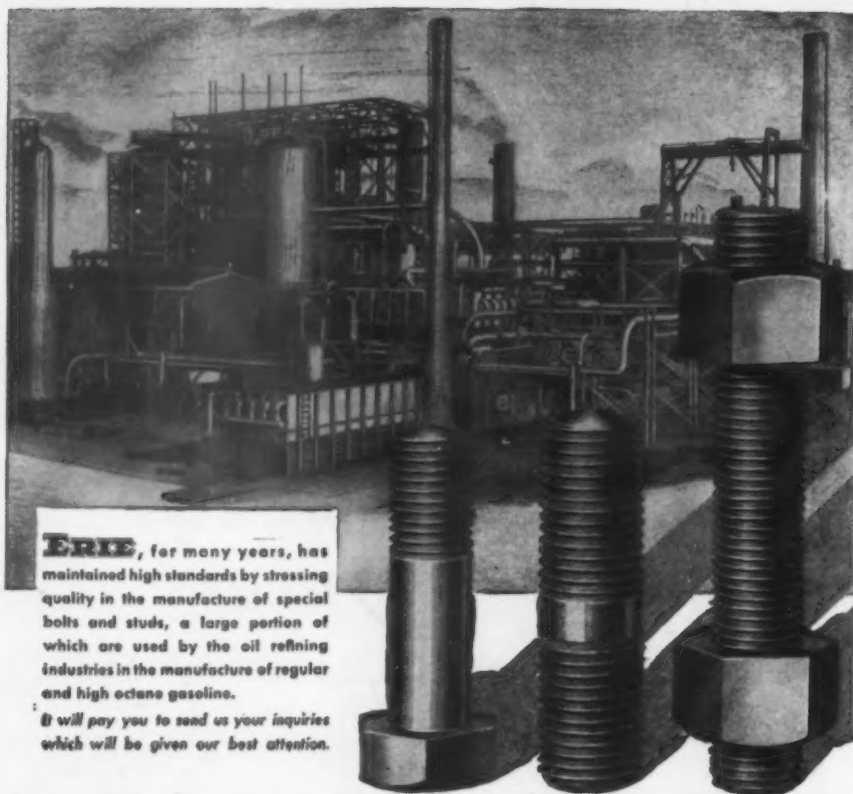
- **CARBON STEELS**
- **ALLOY STEELS**
- **STAINLESS STEELS**  
(Globe Seamless)
- **STAINLESS STEELS**  
(Gloweld Welded)
- **HIGH PURITY IRON**  
(Globeiron)
- **AIRCRAFT**
- **MECHANICAL • PRESSURE**
- **SPECIAL SMOOTH  
INSIDE FINISH**
- **CORROSION RESISTANT  
ANALYSES**
- **FOR HIGH TEMPERATURE  
SERVICE**
- **STANDARD AND  
SPECIAL ANALYSES**
- **STANDARD AND SPECIAL  
SHAPES AND FORMS**

Globe Steel Tubes Co. specializes in the manufacture of tubing. Advanced machinery and methods characterize all mill operations. This concentration of facilities provides a uniform quality of product and dependable source of supply. Write for the Globe general catalog.

**GLOBE STEEL TUBES CO., Milwaukee 4, Wis.**

*Producers of Globe Welding Fittings*

Chicago • Minneapolis • Cleveland • Detroit • New York • Philadelphia  
St. Louis • Tulsa • Houston • Denver • San Francisco • Glendale, Cal.



**ERIE**, for many years, has maintained high standards by stressing quality in the manufacture of special bolts and studs, a large portion of which are used by the oil refining industries in the manufacture of regular and high octane gasoline.

It will pay you to send us your inquiries which will be given our best attention.

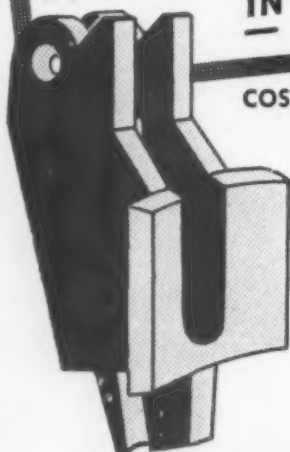
**ERIE BOLT & NUT CO.**

**ERIE, Pa.**

STUDS • BOLTS • NUTS ~ ~ ALLOYS • STAINLESS • CARBON • BRONZE

A DIVISION OF  
**Barium**  
STEEL CORPORATION  
SPECIALTY IN THE NORTH

**8 lbs. OF STEEL SAVED**  
*because*  
**IT'S "INVESTMENT CAST"**  
**IN ONE PIECE**



**COSTLY MILLING MACHINE TIME  
AND TOOLING ELIMINATED**

This is a Pivot Body for a 57 mm. recoilless rifle—made of SAE 4140 and supplied heat-treated. Formerly made from a 9-pound block of metal, it is now a 1 pound INVESTMENT CASTING—a unit saving of 8 pounds of steel, and of expensive milling machine time and tooling resulting in an overall cost reduction of 50%. We can save you precious metal, time and money. Send us a sample part or a print and we'll tell you how much.

SEND FOR LITERATURE

**INVESTMENT CASTING CO.**

319 Chestnut Street

Newark 5, N. J.

Precision Castings

**New York, N. Y.**—Standard Varnish Works. Carl Bauer has been promoted to the newly created position of vice-president in charge of industrial sales. He was formerly industrial sales manager of New York operations.

**Dallas, Tex.**—Oliver Iron and Steel Corporation. A new pole line material division warehouse has been opened here at 150 Howell Street.

**Westfield, N. Y.**—Ajax Flexible Coupling Co., Inc. Robert G. Cady has been made sales manager.

**Milwaukee, Wis.**—MacDermid Incorporated. Donald Sales and Manufacturing Company, 6601 West State St., has been named distributor in Wisconsin for MacDermid's metal cleaners, bright copper and other metal finishing preparations.

**Reading, Pa.**—The Carpenter Steel Company. John W. Thompson has been appointed product manager. He will super-



John W. Thompson

vise stainless, alloy and tool steel sales and will continue to be responsible for product development, advertising and marketing.

**Davenport, Iowa**—Air Reduction Company, Inc. The S. J. Smith Co., 410 West River Street, has been appointed authorized dealer of Airco products, with a complete line of gas and electric arc welding equipment, supplies and accessories.

**Los Angeles, Calif.**—Plomb Tool Company. Lawrence M. Rich has been appointed vice-president and general sales manager of the company.

**Chicago, Ill.**—Mid-West Abrasive Company. Henry L. LeMay has been appointed Chicago district manager.

**North Bergen, N. J.**—Sier-Bath Gear & Pump Co., Inc. Robert A. Miller has been appointed sales manager, gear coupling division.

**Dayton, O.**—E. W. Bliss Company. Roy J. Dusseau has been named district manager in charge of the company's office here.

**Charleston, W. Va.**—Eriez Manufacturing Company. The Engineering Products Company has been appointed sales representative for the full line of Eriez magnetic separation equipment.

(Please turn to page 232)





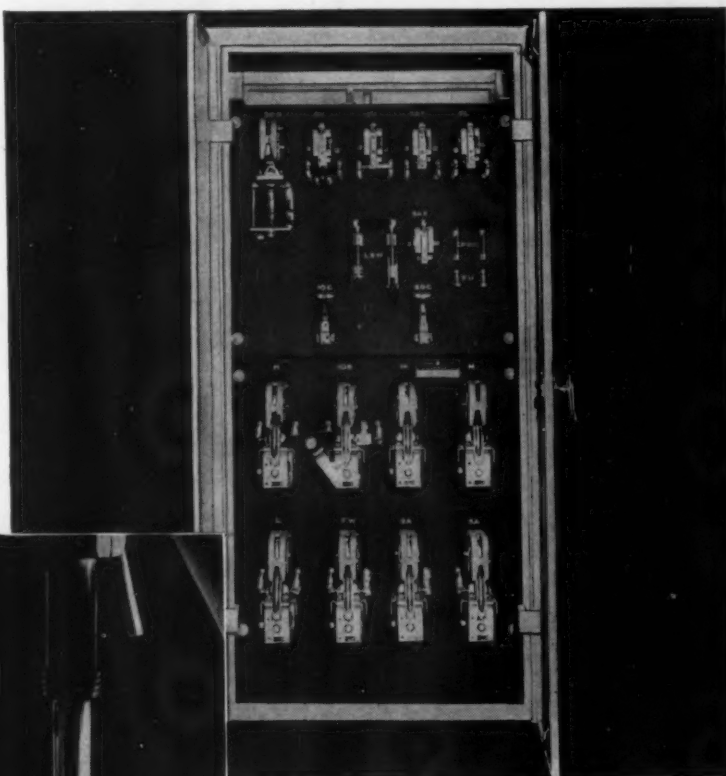
# LAMINATES News

News of General Electric Plastics Laminates that can be of importance to your business.

## G-E PLASTICS LAMINATES Give You EXTRA QUALITY AT LOW COST!

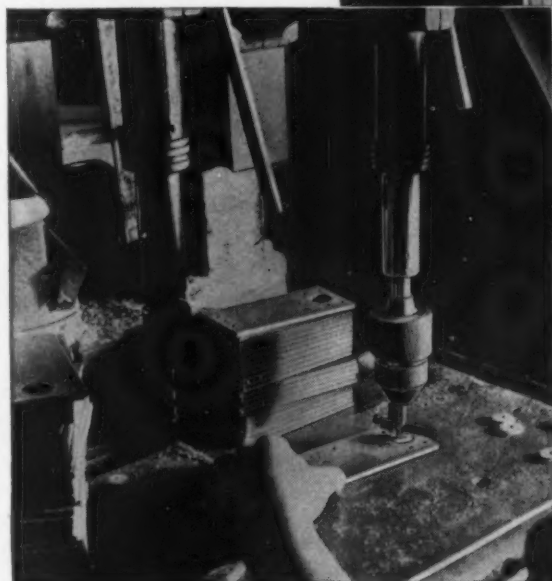
The engineering and manufacturing experience gained through many years in both the production and use of plastics laminates by General Electric is your assurance of extra quality at low cost.

For example, General Electric is one of the world's largest producers of naval and industrial control panels for both electrical and electronics applications. Through extensive work with this equipment, G.E. has developed a complete, high-quality line of laminated sheets for a wide variety of industrial and military applications.



### FAST WORK!

With G-E Laminates, most high-speed machining operations are easily performed on standard wood and metal-working tools. Intricate shapes and fine cross sections can be machined to close tolerances with a minimum of rejects. Work can usually be performed dry, for easier handling of finished pieces.



### COMPLETE LINE OF LAMINATES

General Electric produces a complete line of plastics laminates including sheets, tubes, and rods with cloth, paper, glass fabric, or special bases for a wide variety of applications. For more information about G-E Plastics Laminates, write to Section Y-1, Chemical Department, General Electric Company, Pittsfield, Mass.

● Also look to General Electric for silicone insulation, insulating varnishes, sealing and filling compounds, mica insulation, varnished cloth and tape.

### DEPENDABILITY THROUGH EXPERIENCE

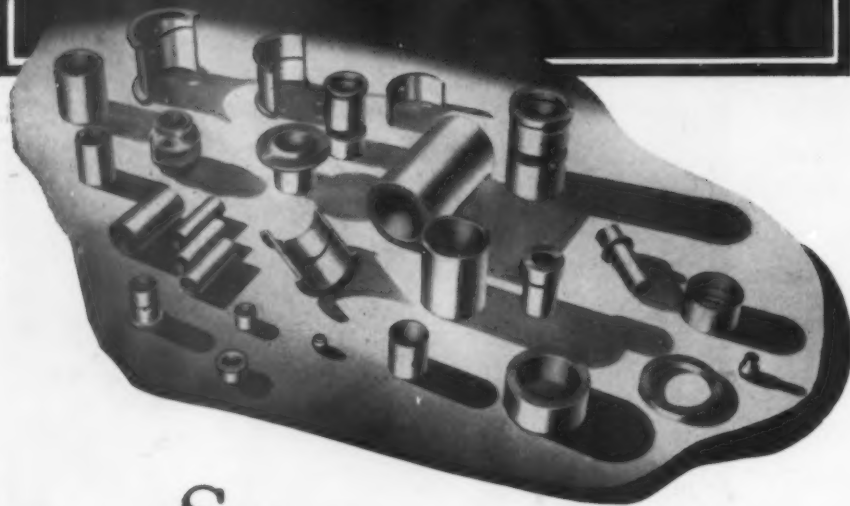
Sheets . . . . . Tubes . . . . . Rods . . . . . Insulating Materials

You can put your confidence in

**GENERAL  ELECTRIC**

## At Sleeve Bearing Headquarters

# ANY TYPE YOU NEED



**S**UCH a complete bearing service has never been at your command before. You will find all types of sleeve bearings in the Johnson Bronze line, plus babbit metal and Universal Bronze Bars. Whether you manufacture equipment that requires bearings, or whether you need bearings for maintenance or replacement, your surest source of supply is Sleeve Bearing Headquarters. Probably 90% of your requirements is available from stock, and will be delivered immediately. This saves you money, too, as well as time.

For your convenience, standard stock size bearings, babbit and bronze bars are stocked by industrial distributors everywhere, and in Johnson branches in twenty industrial centers. For sleeve bearings made to your specifications, contact the Johnson Bronze branch office in your vicinity, or write direct to the main office.

### Types of Bearings

Cast Bronze Bearings • Sheet Bronze Bearings • Babbitt Lined Bearings • Aluminum Bearings • Graphited Bearings • Self-Lubricating Ledaloyl Bearings • General Purpose Bearings • Electric Motor Bearings • Automotive Bearings & Bushings • Diesel Bearings • Locomotive and Mill Bronzes • Car Brasses

**Johnson Bronze**

SLEEVE BEARING HEADQUARTERS

450 SOUTH MILL STREET • NEW CASTLE, PA.

**Chicago, Ill.**—Acme Steel Company. James J. Filas has been appointed manager of the newly-created fastener department of the company. The department will be responsible for the development of manufactured steel specialty items used for fastening and tacking.

**St. Louis, Mo.**—Kimberly-Clark Corporation. T. E. Hall has been transferred from sales representative, Kimsul insulation,



T. E. Hall

to sales representative, Kimpak creped wadding, with headquarters here. His territory includes Missouri, Kentucky, Oklahoma, Texas, Arkansas, Louisiana, Mississippi, and parts of Illinois and Tennessee.

**Hartford, Conn.**—Hartford Special Machinery Company. Robert A. Bode has been appointed sales manager and J. James Tasillo assistant sales manager.

**New York, N. Y.**—General Chemical Division, Allied Chemical & Dye Corporation. Vincent W. Suellau has been ap-



Vincent W. Suellau

pointed director of sales. With the company's sales organization for 30 years, Mr. Suellau has been a heavy chemical sales manager since 1944. He succeeds Chester M. Brown, who was recently appointed a vice-president.

**New York, N. Y.**—Hanson-Van Winkle-Munning Company. W. M. Teets has been transferred from the laboratory staff to the sales force, with headquarters here.

**New York, N. Y.**—SKF Industries, Inc. William F. Hagen has been appointed assistant district manager of the company's office here.

**Fort Wayne Ind.**—J. N. Fauver Company, Inc. Ken Miller has been named representative for the company, serving northern Indiana and south central Michigan.

(Please turn to page 236)



## no introduction necessary



### SEAL BROWN JERSEY GLOVES

Big, thick, fleeced inside. Most economical for warmth and long wear. All popular weights. Sizes for men, women and boys.



### HOT MILL GLOVES

Ideal for steel and tin plate mills or wherever protection against heat is required. Extra large to slip off easily. Inseam and outseam styles.

The name "RIEGEL" needs no introduction to thousands of workers. They know from long use that it stands for work gloves they can always rely on for comfort, economy and rugged resistance to wear.

No wonder, . . . for RIEGEL Gloves are made by one company from raw cotton to finished product . . . according to strict specifications and under constant supervision. No other work gloves are made in this fashion.

Write for our catalog showing a complete line of styles for every type of work.

**RIEGEL TEXTILE CORP., 342 Madison Ave., New York 17, N. Y.**

# Riegel

## WORK GLOVES





## With these 4 you can't go wrong in figuring your painting costs

Funny how so many people think that the price per gallon is the key to lower painting costs, when the *real* factors in low-cost painting are the brush, the tape, the eye and the clock.

Sure, paints differ in price . . . and Barreled Sunlight costs as much if not more than any of them. But if you compare a gallon of Barreled Sunlight with any other paint . . . (1) by the amount you have "ready for the brush" after thinning; (2) by the yardage you get per gallon; (3) by the bright, clean, thorough coverage you get with one

coat; and (4) with the great savings in labor you realize through faster application . . . there will be no question in your mind that for a high-quality, long-lasting paint job Barreled Sunlight will *always* cost less.

Go into your paint cost problems thoroughly. Our representative will gladly show you how much more for your dollar you will get with Barreled Sunlight. Write and he'll call.

U. S. GUTTA PERCHA PAINT COMPANY 18-A Dudley St., Providence, Rhode Island

# Barreled Sunlight *Paints*

In whitest white or clean, pleasing colors, there's a Barreled Sunlight Paint for every job  
*It always costs more not to paint!*



# IT'S IMPORTANT

To SAVE MAN HOURS

REDUCE PRODUCTION COSTS

INCREASE PLANT EFFICIENCY

*That's Why It Will Pay You to Investigate*

**CURTIS** AIR COMPRESSORS  
AIR-OPERATED  
CYLINDERS & HOISTS

Curtis Vertical Air Hoists  
Provide Low-Cost Lifting  
or Lowering of Material  
or Machines.



Curtis Model F Air  
Compressors are  
available as either  
electric or gasoline  
motor-driven units  
(electric motor-driven  
portable or stationary).  
Up to 10 H.P.



Model C Water-Cooled  
Compressors, up to 50 H.P. Fully  
Enclosed — Dust and Dirt Proof —  
Carbon-free Valves. Timken  
Bearings.



Curtis Horizontal Air Cylinders for  
almost any Pushing, Pulling or  
Hoisting Operation.



I-51-1

Throughout the world, Curtis  
equipment has stood the test of  
time, because it is precision  
made from top quality raw  
materials with 97 years of  
"know how."

**CURTIS PNEUMATIC MACHINERY DIVISION**  
of Curtis Manufacturing Company  
1908 Kienlen Ave., St. Louis 20, Mo.

I am interested in items checked below:

☐ AIR HOISTS

Stroke? ☐ Capacity? ☐

Name.....

☐ AIR CYLINDERS

Stroke? ☐ Capacity? ☐

Firm.....

☐ AIR COMPRESSORS

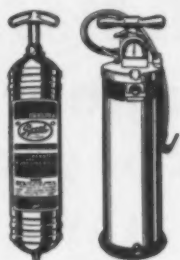
Capacity? ☐ Pressure? ☐

Current? ☐

Street.....

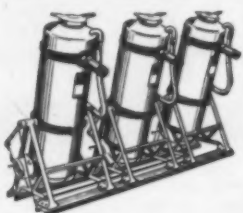
City.....Zone.....State.....

Whatever  
your  
hazard,  
**PYRENE'S**  
the  
buy!



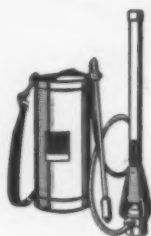
#### VAPORIZING LIQUID

The all-purpose extinguisher effective on almost every kind of fire. Safe on electrical fires, too. 1 qt. and 1½ qt. pump types; 2 qt. and 1 gal. pressure-operated types.



#### MANUAL AND AUTOMATIC SYSTEMS

Complete fire-fighting systems, using chemical foam or air foam. For storage tanks, dip tanks, loading racks, etc.



#### AIR FOAM

Couple playpipe to hose line. Every 19 gals. of water and 1 gal. of PYRENE Foam Compound yield 200 gals. of foam! For flammable liquids and ordinary combustibles.



#### CARTRIDGE-OPERATED

Eliminates annual recharging. For fires in wood, paper, textiles. Shoots water or anti-freeze solution. 2½ gal. size.

Also Soda Acid, Pump Tank, Chemical Foam, and other extinguishers.



**T**HERE'S A PYRENE® for every fire hazard...and there are PYRENE jobbers in all principal cities. You can order all your extinguisher needs—the reliable, prompt, economical, easy way—from one local establishment. You can do it on one purchase order. You get immediate delivery by the jobber, and you don't have to pay freight charges from the factory.

The name PYRENE stands for precision-made, time-tested products. Your fire extinguishers can mean the difference between a moment's excitement and a burned-out plant. Don't settle for less than PYRENE quality! Write for name of your local PYRENE jobber.

©T.M. Reg. U.S. Pat. Off.

**PYRENE MANUFACTURING COMPANY**  
578 Belmont Ave. Newark 8, N.J.

Affiliated with C-O-Two Fire Equipment Co.



**Teterboro, N. J.**—Eclipse-Pioneer Division of Bendix Aviation Corporation. Arthur E. Raabe has been named general manager. Mr. Raabe is also a Bendix vice-president.

**Detroit, Mich.**—The Taft-Peirce Manufacturing Company, Gottsman Machinery, 2457 Woodward Avenue, will be exclusive representative for machine tool sales in Detroit, Toledo, and the eastern half of Michigan.

**Akron, O.**—Palm, Fechteler & Company. Leverett A. Anderson, former director of purchases for the Twin Coach Company



Leverett A. Anderson

and subsidiaries, and former president of the Purchasing Agents Association of Akron, has been named to represent the company in Ohio.

**Seattle, Wash.**—Whiting Corporation. A district sales office has been opened here at 350 Skinner Building. R. E. Florine has been appointed district manager.

**Los Angeles, Calif.**—United Chromium, Incorporated. Chet Borlet has joined the company here, to sell and service the entire Unichrome line of plated and organic coatings for metals.

**Baltimore, Md.**—Signode Steel Strapping Company. Merritt W. Jones has been named manager of the newly created Baltimore sales district. The district comprises the state of Virginia, and portions of Maryland, West Virginia and North Carolina.

**Cleveland, O.**—The Columbian Vise & Manufacturing Company. Dan C. Swander, Jr., in addition to his duties as vice-president, is now sales manager of the company.

**Indianapolis, Ind.**—Prest-O-Lite Battery Company. Gilbert K. Hewitt has replaced F. G. Hipp as district representative here.

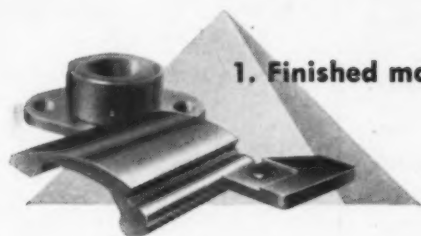
**Simpson Electric Company, Chicago, Ill.**, has opened a new factory for the production of panel instruments and test equipment at Aurora, Ill. Simpson now has a total of five plants.

**Racine, Wis.**—Peerless Machine Company. Frank T. Wruk has been elected vice-president in charge of sales and service.



# Oilite

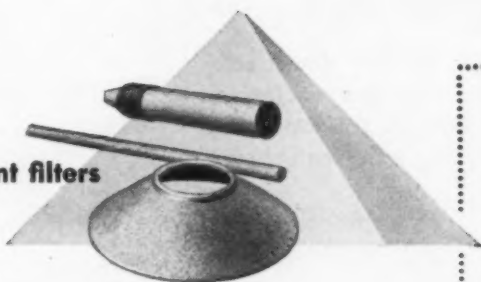
Customers state... **Products** *yield pyramidal savings...*



1. Finished machine parts



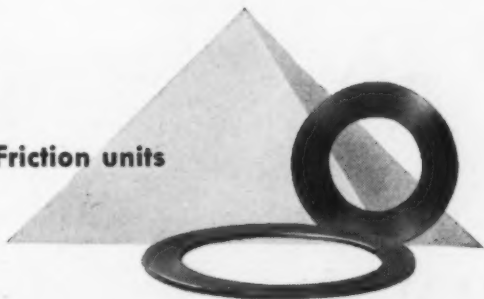
2. Heavy-duty oil-cushioned, self-lubricating bearings



3. Permanent filters



4. Heavy-duty oil-cushioned, self-lubricating cored and bar stock



5. Friction units

Contact your local Oilite field engineer or the home office

## SAVINGS in

- △ Unit Cost
- △ Assembly Cost
- △ Capital Investment
- △ Burden • Floor Space

## PLUS

- △ Quality and Service
- △ Engineering Insurance

## PLUS

(Nationwide and Canada)

- △ Field Engineers
- △ Distributors • Dealers
- △ Bearing Depots



MANUFACTURING  
COMPANY

SUBSIDIARY OF CHRYSLER CORPORATION  
DETROIT 31, MICHIGAN

DIVERSEY OFFERS

4

## AMAZING SANITATION PRODUCTS

Proved - Best-Over-All - The - Rest - By - Actual - Test



### PLYOWAX

...superior water-emulsion wax which gives you an "insurance" finish . . . protects against heavy traffic abuse . . . gives lasting, anti-slip protection . . . enhances the beauty of your floors! Economical, too!



### PLYOKEM

...neutral liquid cleaner . . . safe on all surfaces not harmed by water . . . saves rinsing time . . . excellent for maintaining waxed floor surfaces . . . gives "slicker-than-whistle" cleaning at lower cost every time!



### DIVOLUXE

...An amazing new cleaner developed by Diversey . . . incorporates exclusive Dynamic Cleaning Power! You must see this new kind of cleaning action to believe it! It's revolutionary!



### DIVERSOL

... bactericide-disinfectant... proved superior by more than 25 years of continued usage in over 26,000 food plants! Disinfects and deodorizes thoroughly . . . controls bacteria . . . safe, easy, economical, practical!

### CALL YOUR DIVERSEY D-MAN

He's trained and experienced in sanitation methods and procedures . . . knows how to get right to the heart of your cleaning, waxing and disinfecting problems! Diversey's D-Man service is available to you 'round-the-clock . . . year-'round! No cost . . . no obligation!



Call  
or write

## THE DIVERSEY CORPORATION

Maintenance Products Department

1820 Roscoe Street • Chicago 13, Ill.

In Canada: The Diversey Corporation (Canada) Ltd.

Lakeshore Road, Port Credit, Ontario

## INDUSTRIAL DEVELOPMENTS

Sintercast Corporation of America has moved its office, laboratory and production facilities from New York city to larger quarters in Yonkers, N. Y. The firm specializes in research into and development of new powder metallurgy techniques and alloys, and production of standard and specialized powder metal parts.

Powdered Metal Products Corporation of America, Franklin Park, Ill., will build a new addition at its Belmont Avenue plant which will double present production capacity.

Air Reduction Company, Inc., will construct a new manufacturing plant of approximately 272,000 square feet on a 25-acre plot at Union, N. J.

Nelson Stud Welding Division of Morton Gregory Corporation will increase by 50% its floor space and manufacturing capacity at the Lorain, O. plant.

American Cyanamid Company will lease a 100,000 square foot building now under construction in Chicago's Addison-Kimball District.

Chelsea Fan & Blower Company has shifted its general offices and plant to Plainfield, N. J. Facilities now cover an additional 90,000 square feet of manufacturing and assembling space.

Brush Development Company, Cleveland, O., has expanded its line of surface measuring instruments by purchasing the business of The Faxfilm Company, Cleveland.

Kropp Forge Company has taken the third step in its plant expansion program, begun in 1948, with the acquisition from Ordnance Tank Automotive Center, Detroit, Mich., of its forge plant at Melvindale, Mich. Since the outbreak of the Korean war, the Kropp's defense orders have doubled over last year's average monthly volume.

Arwood Precision Casting Corp., Brooklyn, N. Y., has opened a New England branch plant at Groton, Conn. The move will double the firm's production capacity.

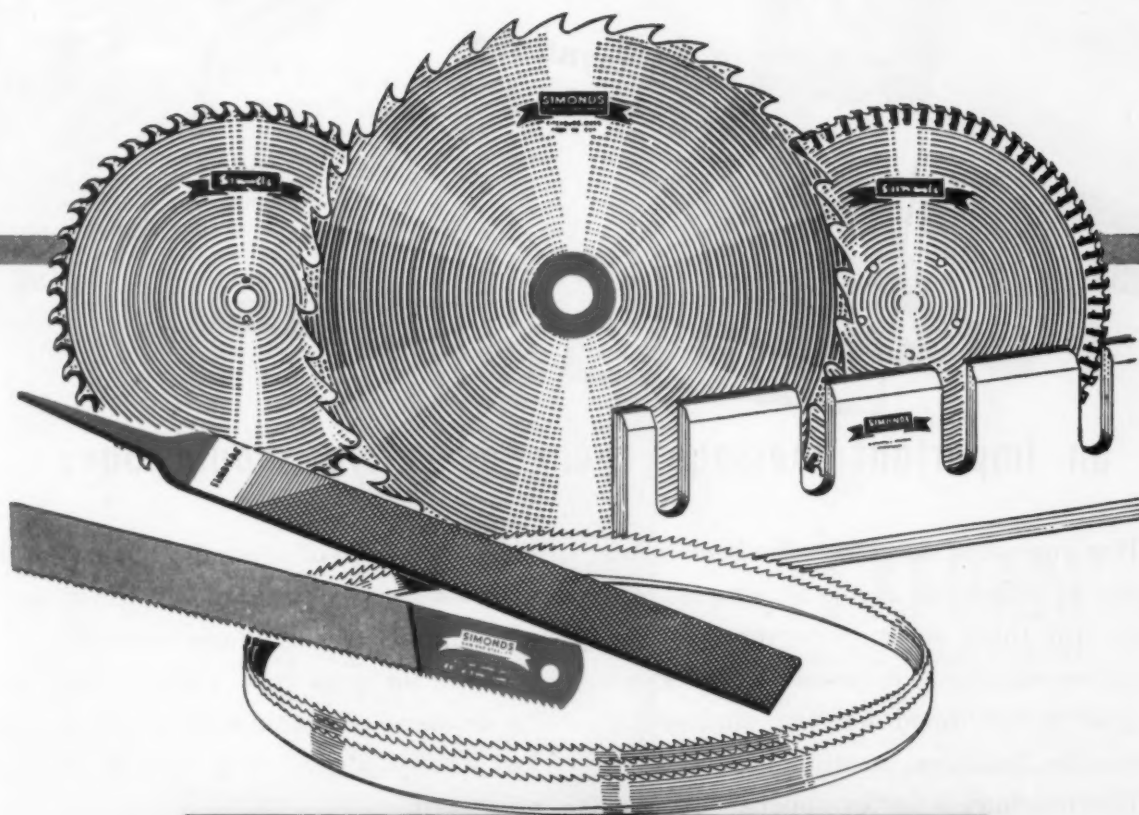
Gardner-Denver Company, manufacturer of rock drills, air compressors, pumps, etc., is establishing a Canadian plant at Brantford, Ontario. It will be operated by Gardner-Denver Company (Canada) Limited.

St. Regis Paper Company, New York, N. Y., has announced plans for the early construction and installation of two kraft paper machines and pulp manufacturing facilities. One will be added to the company's "Kraft Center" at Pensacola, Fla., and the second will be a new mill to be built at Jacksonville, Fla.

(Please turn to page 242)

**The Top-Performance Line...**  
**because**  
**it's the Top-Quality Line**  
**of Saws...Knives...Files**

(SOLD THROUGH TOP INDUSTRIAL SUPPLY DISTRIBUTORS)



**SIMONDS**  
**SAW AND STEEL CO.**

**FITCHBURG, MASS.**

*Branch offices in Boston, Chicago, San Francisco and Portland, Ore. Canadian Factory in Montreal, Que.*





**an important message every executive should have!**

Has your staff forgotten the basic principles of selecting a supply source? Do they still think in wartime terms of urgency or scarcity as opposed to the factors of quality, scheduled delivery, engineering assistance, facilities, location, etc.?

This brochure is an "eye-opener" regard-

ing the selection of a foundry but the fundamentals could be your guide to the selection of a supplier of nearly any material.

Write for your copy today—you'll find its message entertainingly presented and just what you've wanted to route through your staff.



# Continental

**FOUNDRY & MACHINE CO.**

EAST CHICAGO, IND. • PITTSBURGH, PA.

Plants at: E. Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.

**Carbon and Alloy Steel  
Castings from  
20 to 250,000 pounds**

**Complete Rolling Mills and  
Auxiliary Equipment**

**Iron, Alloy Iron and Steel  
Rolls for all industries**



## TEXLITE®

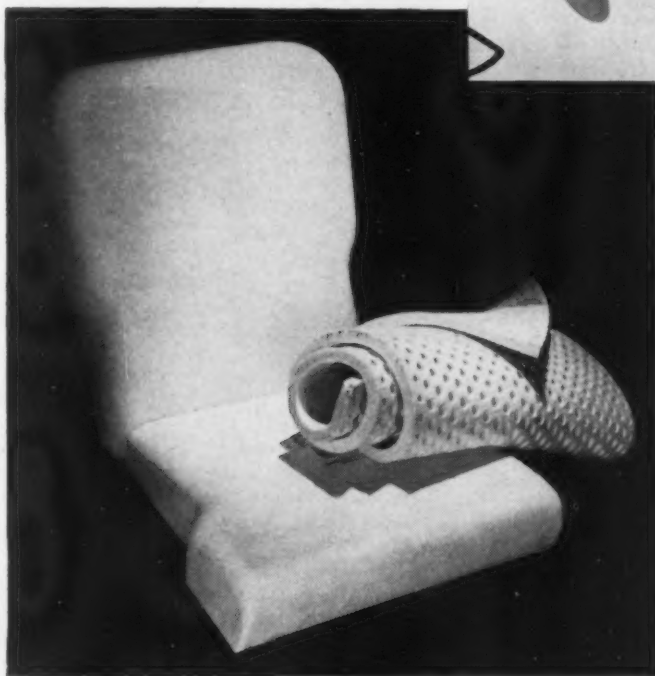
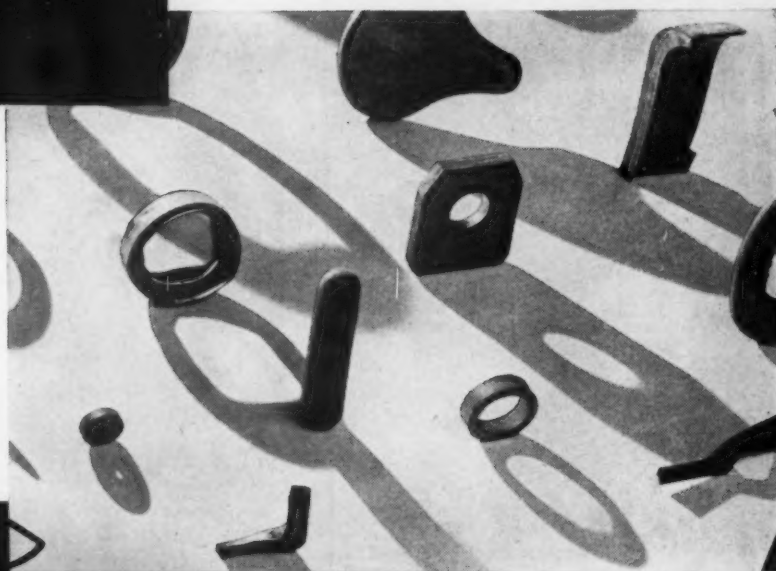
**RUBBERIZED CURLED HAIR**

Texlite, the new cushioning filler, builds lasting comfort at competitive costs. It combines all the fine qualities of curled hair and rubber; eliminates costly handpicking. Vulcanized insulator, exclusive with Texlite, saves cost and labor of using separate insulators.

## SPONGEX®

**CELLULAR RUBBER**

Spongex has over 60,000 recipes for making cellular rubber. The formulation of these recipes has developed a know-how that makes Spongex your broadest and best source for cellular rubber.



## TEXFOAM®

**LATEX FOAM RUBBER**

Texfoam's special patented process makes the liveliest foam... the foam of finest texture... the best in cushioning comfort. Yet it costs you nothing extra!

*The World's Largest Specialists in Cellular Rubber*

**THE SPONGE RUBBER PRODUCTS CO.**

404 DERBY PLACE

SHELTON, CONN.

# PAGE WIRE

LOW CARBON  
HIGH CARBON  
STAINLESS  
SPECIAL ALLOY  
ARMCO IRON

ROUND  
FLAT  
OR  
SHAPED

**You draw the Shape**  
**—Page can draw the Wire**

—the way you want it for your production—whether it's ALL of your product, or only a part.

Cross-sectional areas up to .250" square; widths to 3/4"; width-to-thickness ratio not exceeding 6 to 1.

**for Wire or**  
**Information about Wire—**

*Get in touch  
with Page!*



PAGE STEEL AND WIRE DIVISION  
AMERICAN CHAIN & CABLE

**Bendix Aviation Corporation**, Detroit, Mich., has purchased the property and facilities of the Victor Animatograph Corporation at Davenport, Iowa. Included in the sale was a modern factory building. The move is designed to handle increased production of aircraft instruments and accessories.

**Ingersoll Steel Division** of Borg-Warner Corp., Chicago, Ill., has been separated into two distinct and independently operated manufacturing units. One will continue to be known as the Ingersoll Steel Division, with steel mills at New Castle, Ind. The other, with plants in Chicago and Kalamazoo, Mich., will bear the name of the Ingersoll Products Division.

**The Electric Storage Battery Company** has begun its \$5,000,000 expansion program at the Crescentville plant in Philadelphia, Pa. Mayor Bernard Samuel of Philadelphia is shown in the accompanying



ing photograph turning the first spadeful of earth on the project. Looking on, left to right, are Ralph Kelly, president of the city's Chamber of Commerce, S. W. Rolph, president of the company and C. F. Norberg, executive vice-president of the company.

**S. Morgan Smith Company**, York, Pa., hydraulic turbine and valve manufacturer, has purchased the R-S Products Corporation, Philadelphia, Pa.

**The Capewell Manufacturing Company**, Hartford, Conn., has acquired the facilities of the Armstrong Manufacturing Company, Bridgeport, Conn. Armstrong makes pipe-threading, cutting and reaming tools and pipe vises.

**Fansteel Metallurgical Corporation**, North Chicago, Ill., has begun work on a \$390,000 program to expand facilities for production of tungsten and molybdenum.

**The Midland Manufacturing Company**, Wichita, Kans., has purchased all rights to the manufacture of Starbilt storage equipment, formerly produced by the Star Manufacturing Company, Oklahoma City, Okla. Midland will continue to manufacture storage equipment under the trade name Starline, with production concentrated on steel industrial bins and shelving for the first few months. Other new products will be added later. A new

building with 15,000 square feet of floor space is under construction in Wichita. The products will be the same as formerly made by Star, and parts will be interchangeable with present equipment.

**H. K. Porter Company, Inc.**, Pittsburgh, Pa., has announced the formation of Jarecki Valve Division, Tulsa, Okla., to handle the manufacture and sale of valves formerly produced at Jarecki Manufacturing Company plant at Erie, Pa.

**Marathon Paper Mills of Canada, Ltd.**, will erect what is said to be the first sizeable chlorine plant in the United States or Canada to use De Nora mercury-type cells with a rated capacity of 30,000 amperes. The plant will be located at Marathon, Ontario and will produce 25 tons of chlorine per day. The plant was designed by Monsanto Chemical Company, and will be built by Leonard Construction Company.

**Westinghouse Electric Corporation** has opened negotiations for a tract of land near the Baltimore, Md. Friendship Airport, for a new plant to meet expanding military demand for products of the company's electronics and x-ray division. The new plant will have a manufacturing area of about 400,000 square feet, and in normal times will employ 2,000 people.

**Ward Leonard Electric Company**, Mount Vernon, N. Y., has established an industrial chrome division. It is developing and manufacturing chrome plating units, solutions and processes for industrial hard chrome plating of machine tool accessories, and component parts.

1 1 1

## ITALIAN BROOM CORN RELIEVES DOMESTIC SHORTAGE

Seventy-five tons of Italian 'broom corn were recently unloaded from the American Export Lines' cargo vessel Examiner, in Jersey City, N. J. The shipment will help ease an expected shortage of household and industrial brooms in the United States next year.

According to the National Broom Manufacturers and Allied Industries Association, American broom manufacturing plants are facing their most serious shortage of broom corn since Colonial days.

Drought, excessive rain and cold weather have reduced the normal crop from 44,000 tons to an estimated 26,000 tons this year. In addition, heavy Armed Services purchases have aggravated the shortage. Crop prices have skyrocketed from \$265 to \$510 per ton. Importation of the Italian product will help to keep American broom manufacturing plants running, and also help to maintain reasonable prices.

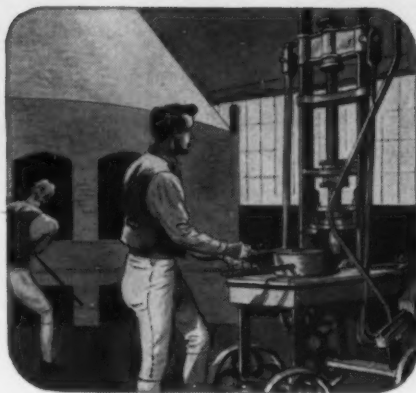
Sorghum Saccharatum, or broom corn, has no food value. A relative of "ear corn", broom corn is now grown in Texas, New Mexico, Oklahoma, Colorado, Kansas and Illinois. Approximately 30% of the annual production is used by industrial plants.

(Please turn to page 244)

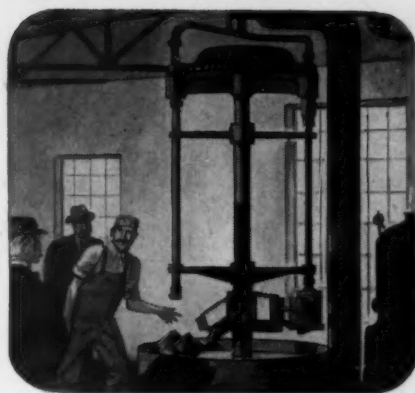




**1 1621**—Glass was money! America's first glass factory was actually a mint—not for the manufacture of coins but to make glass beads for use as money when buying land, food and furs from the Indians.



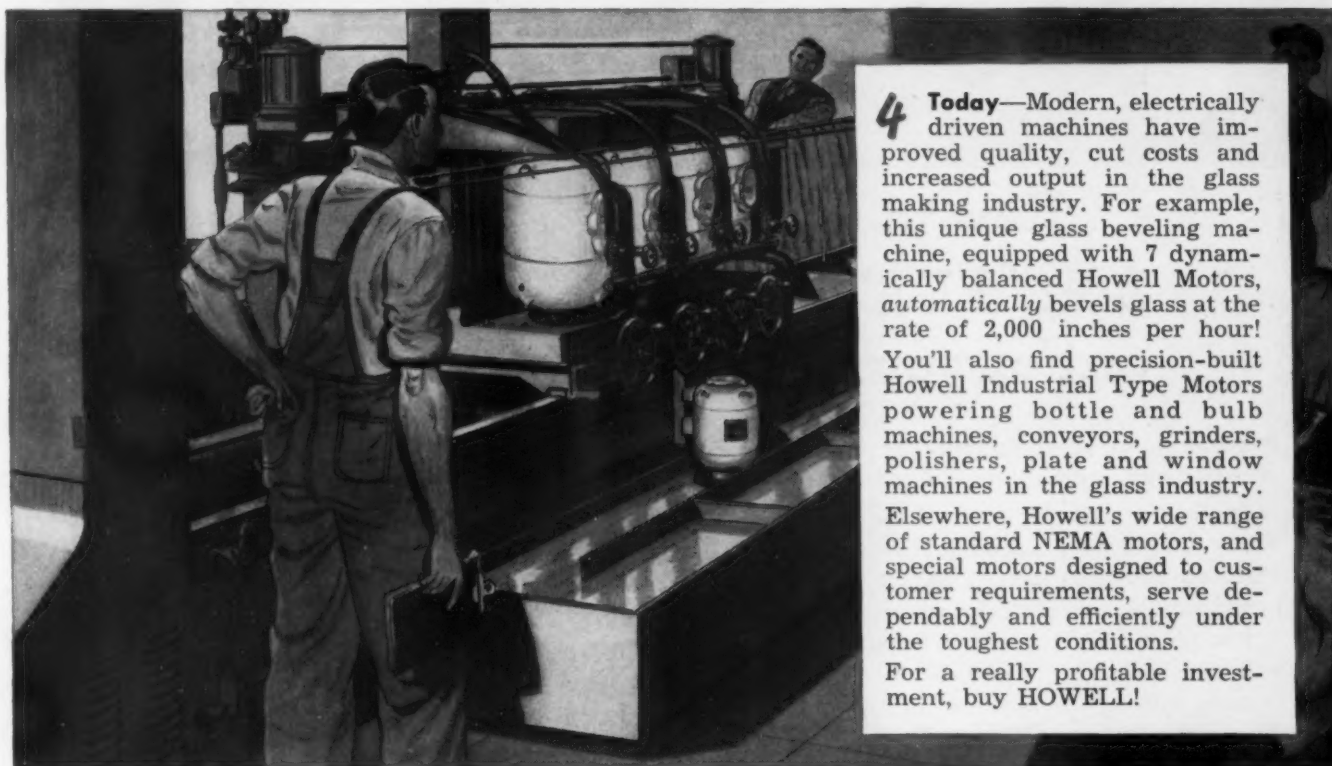
**2 1827**—Blown glass was the rule until Enoch Robinson, a carpenter, figured glass could be pressed into shape . . . the glass pressing machine was born. Electricity to power new machines was still to come.



**3 1899**—Owens invented a machine to make bottles as the machine age arrived in glass. By 1915, Howell "Red Band" Motors were making important contributions to this and other industries.

#### ANOTHER HOWELL SUCCESS STORY

## GLASS...from artisans to automatic machines



**4 Today**—Modern, electrically driven machines have improved quality, cut costs and increased output in the glass making industry. For example, this unique glass beveling machine, equipped with 7 dynamically balanced Howell Motors, automatically bevels glass at the rate of 2,000 inches per hour! You'll also find precision-built Howell Industrial Type Motors powering bottle and bulb machines, conveyors, grinders, polishers, plate and window machines in the glass industry. Elsewhere, Howell's wide range of standard NEMA motors, and special motors designed to customer requirements, serve dependably and efficiently under the toughest conditions. For a really profitable investment, buy HOWELL!

*Free enterprise encourages mass production, supplies more jobs—provides more goods for more people at less cost.*

Howell totally enclosed, fan-cooled motor—windings completely sealed against dirt and weather.



## HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.  
Precision-built Industrial Motors Since 1915





## How to keep Line "FEATHERS" out of your hair !

It was a clean, sharp line till it had to be erased. But when it was re-inked, brother how it feathered and "blobbed"!

Feathering lines are one of the things you don't have to worry about with Arkwright Tracing Cloth. Even erased surfaces will take a neat, sharp line. What's more, you'll never find pinholes, thick threads or other imperfections in Arkwright cloth. You'll never have to fear that your drawings will discolor, go brittle or become opaque with age. A drawing on Arkwright Tracing Cloth will yield clean, clear blue-prints years after you make it.

Aren't your drawings worth this extra protection? Arkwright Finishing Co., Providence, R.I.

# ARKWRIGHT

*Tracing Cloths*

AMERICA'S STANDARD FOR OVER 25 YEARS



### QUALITY CONTROL AND SPRING DESIGN COURSES

A new eight-page bulletin describing their plant courses in (1) Spring Design and Specifications and (2) Quality Control, has been published by the Hunter Spring Co., Lansdale, Pa. General information on the courses includes background, length, where and when held and enrollment. A session on the Negator basic new elastic member, is added to the Quality Control course. Subject matter, schedule and instructors of each course are shown in the bulletin.

♦ ♦ ♦

### RYERSON MOVES INTO NEW CINCINNATI STEEL-SERVICE PLANT

Joseph T. Ryerson & Son, Inc., steel distributors, have moved into their new and larger steel-service plant and office building at 3475 Spring Grove Ave., Cincinnati, Ohio. The new plant represents an investment of well over \$1,000,000 and



E. R. Nelson, manager of Ryerson Cincinnati steel-service plant

replaces the company's former plant at Front Street and Freeman Avenue which has been occupied since 1923. The mail address of the company remains unchanged, Box 300. Total floor space of the new plant is 165,000 square feet, or almost four acres. Complete equipment for cutting and otherwise preparing steel to customers' requirements has been installed. E. R. Nelson is manager of the new plant.

♦ ♦ ♦

### CHART ON PACKAGING FOR MILITARY SERVICES

Practical reference chart for firms whose packages or packaging materials must meet the specifications of military services, has been prepared by National Adhesives, 270 Madison Avenue, New York, N. Y.

The chart lists the principal government symbols, types of packaging, adhesive applications, and the type numbers of National's "Resyn" adhesives that are acceptable under the specifications.

It includes fiberboard boxes, drums, laminated shipping bags and other containers for export shipment, as well as containers for medicinal products ammunition, etc. Copies of the chart are available from the New York Office or any of the company's offices and plants elsewhere in the United States and Canada.

(Please turn to page 246)

PULLMAN-STANDARD  
Car Manufacturing Co. uses

# MICRO Precision Switches as a principle of GOOD DESIGN!



John Popaeko, draftsman, (left) and John L. Swarner, electrical planning assistant, compare MICRO V3-1 switch installation with former non-snap type switch.

These small switches  
give sure protection  
against fire, waste  
on modern railway  
passenger equipment



When Pullman-Standard Car Manufacturing Company's engineers sought to "kill three birds with one stone"... eliminate a potential fire hazard, avoid waste of current and improve sleeping-car design...they turned to MICRO SWITCH and found a quick answer.

The problem was to provide a small,



dependable snap-action switch to turn off automatically the berth lamp when closing the berth. Requirements were exacting: the switches must be "fool-proof," must serve as ready replacements in existing cars as well as components in new ones, must be dependable and economical.

MICRO SWITCH engineers met this challenge with a precision switch that filled Pullman-Standard's needs perfectly.

You say your organization doesn't build Pullman cars...you have no need of that type? Agreed—but perhaps you and your design engineers have a prob-

lem of product *design or redesign* involving a precision-switch application. If so, you should know about MICRO SWITCH... our full line of more than 4600 switches, each with different characteristics... our ability to engineer and build *special* snap-action switches, even for seemingly "impossible" applications! Consultation will convince you—as it has convinced Pullman-Standard and thousands of other concerns, large and small—that "the use of MICRO Precision Switches is a principle of good design." Write or call MICRO SWITCH Freeport, Illinois... or any of our branch offices.

OVER 4600 TYPES OF PRECISION SNAP-ACTION SWITCHES



## MICRO Precision Switches

A DIVISION OF MINNEAPOLIS-HONEYWELL REGULATOR COMPANY

JANUARY, 1951

Want Additional Product Information? See Page 19.

245





**BEST FOR EVERY FOLDING CHAIR PURPOSE!**

- **DURABLE**—strong steel frame, reinforced
- **SAFE**—no tipping, pinching, snagging hazards
- **COMFORTABLE**—extra-wide, extra-deep seats and backs
- **CONVENIENT**—fold quietly, quickly, compactly
- **RUBBER SHOES**—long-life, replaceable
- **THREE SEAT STYLES**—formed steel; formed plywood; imitation-leather upholstered

**OVER EIGHT MILLION IN USE!**

WRITE FOR  
DESCRIPTIONS  
AND PRICES

*American Seating Company*

Grand Rapids 2, Michigan

Branch Offices and Distributors in Principal Cities

**SMALL PARTS**

Cost less when made by

**MULTI-SWAGE**

The economy way to get  
a million small parts  
similar to these —

Examine the tubular metal parts shown here twice size. If you use anything similar . . . in large quantities . . . important savings can be yours. Send us the part and specs. Our quotation will show why the Bead Chain Company's MULTI-SWAGE Process has long been known as the most economical method of making electronic tube contact pins, terminals, jacks and sleeves. And, why more and more users of mechanical parts (up to  $\frac{1}{4}$ " dia. and to 2" length) employ our facilities. WRITE for Data Bulletin.

**B THE BEAD CHAIN MANUFACTURING CO.,**  
Tr. Mark 88 MOUNTAIN GROVE ST., BRIDGEPORT 5, CONN.

**BOOKLET DESCRIBES LOCKNUTS AND OPERATING PRINCIPLES**

"Types of Locknuts and their Principles of Operation" is the title of illustrated booklet recently released by the Locknut Section, Industrial Fasteners Institute, 3648 Euclid Avenue, Cleveland, Ohio. Twenty-three types of locknuts made by various manufacturers are illustrated, the text detailing description of each nut, principle of operation and giving the name of the manufacturer. The booklet states that locknut manufacturers and users recognize with complete candor that no one locknut can satisfactorily perform all of the functions for which locknuts are purchased and used, and that locknuts are now commercially available for most, if not all, known applications.

1 1 1

**HEATING & VENTILATING EXPOSITION  
JANUARY 22 to 26**

The tenth International Heating and Ventilating Exposition, coinciding with the annual meeting of the American Society of Heating and Ventilating Engineers, will be held in the Commercial Museum, Philadelphia, January 22 to 26. Approximately 350 exhibitors are enrolled for the exposition which will comprise every variety of equipment suited to the requirements of heating, ventilating and air conditioning. Equipment designed for various classes of commercial and industrial applications will be largely featured. These will include improvements in direct radiation, forced air heating and cooling, high velocity air conditioning system which uses only half the conventional quantity of air, radiant heating, gas-fired apparatus, year-round air conditioning units, and the boiler-burner group including a line ranging from 100,000 to 800,000 BTU per hour capacity designed to permit either oil or gas firing by an interchange of burners.

The exposition will include a wide array of auxiliary and incidental equipment including indicating and recording systems, controlling systems, and miscellaneous tools and equipment.

Further information is available from the International Exposition Co., Grand Central Palace, New York, N. Y.

1 1 1

**COMBINED STANDARD STEEL LISTS REVISED**

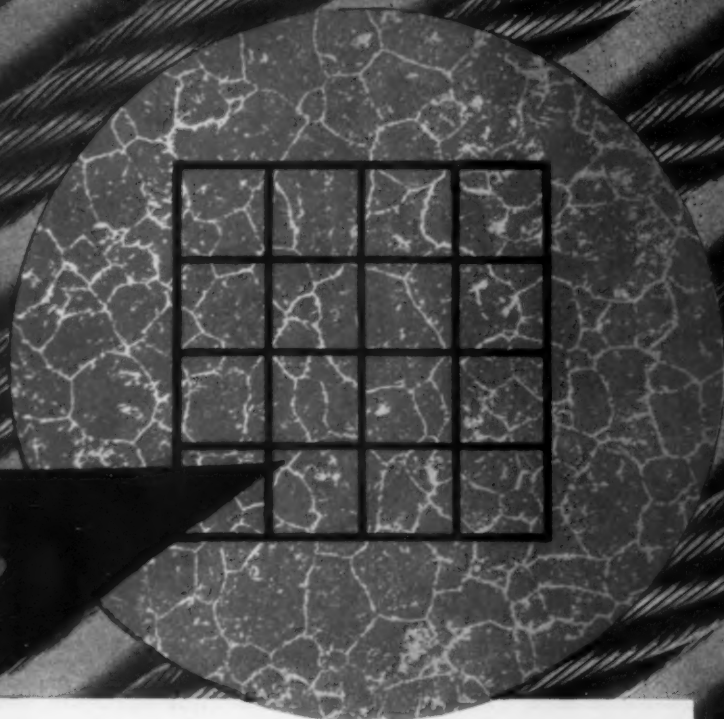
The Babcock & Wilcox Tube Co., Beaver Falls, Pa., offers a revised edition of combined standard steel lists of AISI and SAE. The four-page technical data card covers three groups: basic open-hearth and acid-bessemer carbon steels and resulfurized carbon steels, open hearth and electric-furnace alloy steels, and stainless and heat-resisting steels, subject to standard variations for check analysis. Percentage of chemical composition limits and other elements are stated for each steel. This is a handy list to keep for frequent reference. Known as technical data card 119C, copy is available on request.

(Please turn to page 250)

**ALL ROPES look ALIKE... but  
THERE'S MORE THAN MEETS THE EYE...**

**IN**

**Wickwire  
Rope**



Rope wire viewed under a microscope with 100 magnification and the correct McQuaid-Ehn grid superimposed and matched to the sample for classification.

**Y**es, all wire ropes *do* look alike...on the outside. But not when you go 100 times beyond the range of normal vision. That's where you find the big difference...because that's where the grain size of the steel shows up.

Steel used for Wickwire Rope is measured for proper grain size by the exacting McQuaid-Ehn test. Typical samples are carburized to 1750° F., cooled slowly, polished and etched; then examined under a high-powered microscope for the proper matching of a McQuaid-Ehn grid to the size of the crystals. Thus, we make sure that steel going into Wickwire Rope conforms to the definite grain size that will give longest, most satisfactory service.

Such quality control of basic prop-

erties is possible only with a company like Wickwire...where manufacture is integrated from molten metal to finished rope...where the know-how of 52 years experience goes into the making of every wire rope.

It explains, too, why Wickwire Rope always gives you uniform performance, enduring reliability and longer, more economical service on the job. For the *right* rope for your particular requirements, see your local Wickwire distributor. Wickwire Rope is available in all sizes and constructions, both regular lay and WISCOLAY Preformed. For your free copy of "Know Your Ropes" write to: Wire Rope Sales Office, Wickwire Spencer Steel Division of C.F.&I., Palmer, Mass.

## **WICKWIRE ROPE**

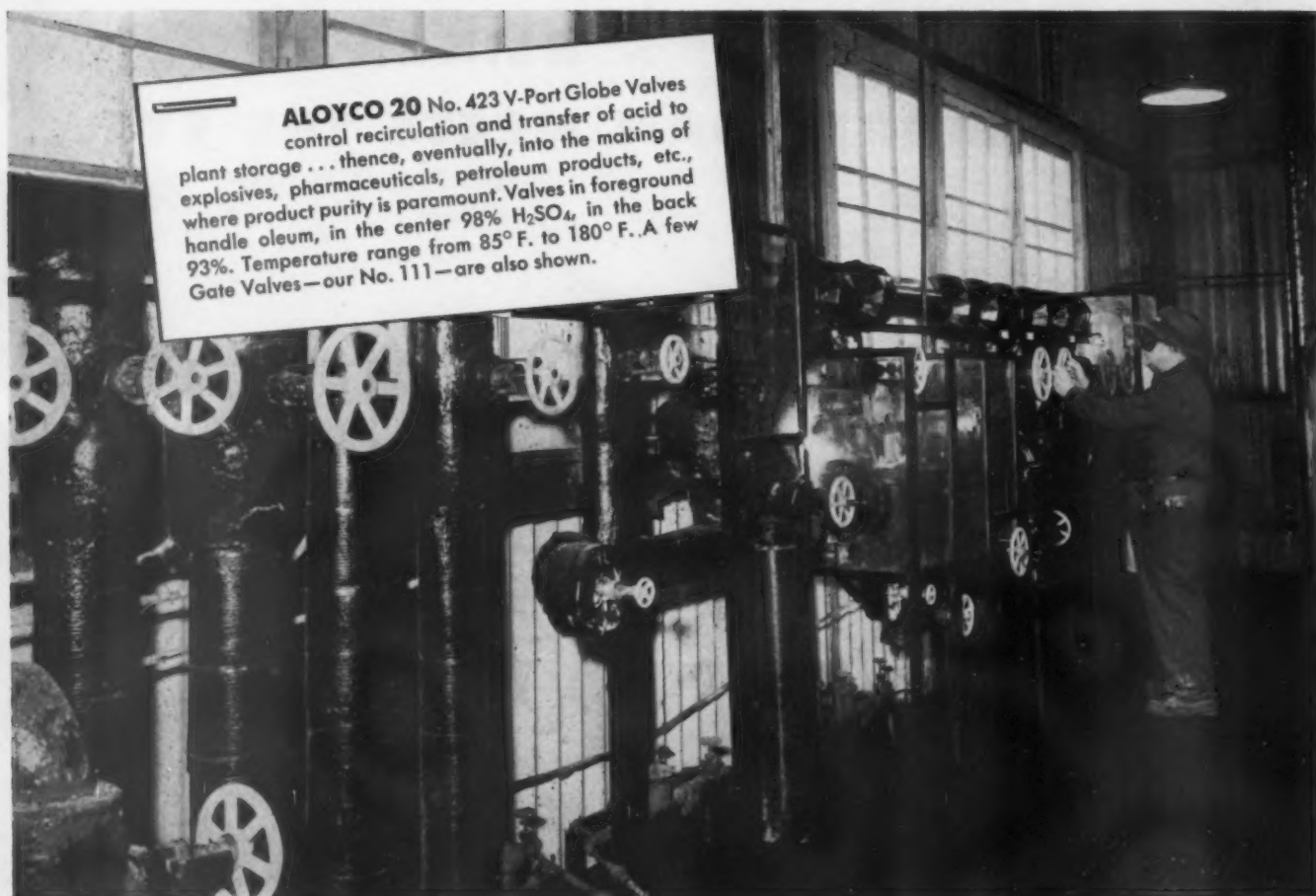
**A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION**

WIRE ROPE SALES OFFICE AND PLANT—Palmer, Mass. EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.

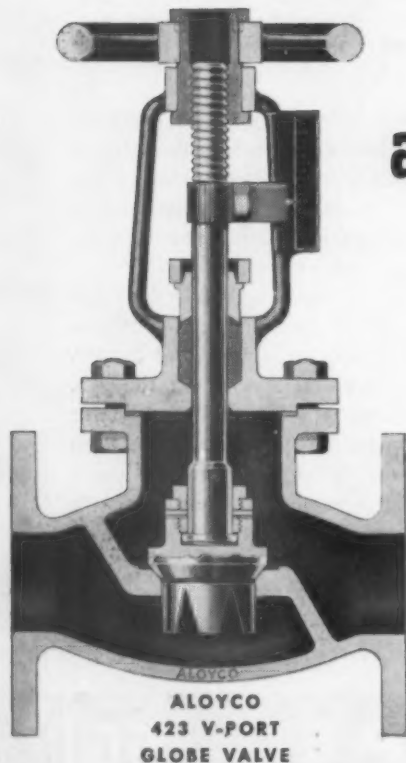
SALES OFFICES—Abilene (Tex.) • Boston • Buffalo • Casper • Chattanooga • Chicago • Denver • Detroit • Emlenton (Pa.) • Houston • New York  
Odessa (Tex.) • Philadelphia • Tulsa

PACIFIC COAST SUBSIDIARY—The California Wire Cloth Corporation, Oakland 6, California





**ALOYCO 20** No. 423 V-Port Globe Valves control recirculation and transfer of acid to plant storage... thence, eventually, into the making of explosives, pharmaceuticals, petroleum products, etc., where product purity is paramount. Valves in foreground handle oleum, in the center 98%  $H_2SO_4$ , in the back 93%. Temperature range from 85° F. to 180° F. A few Gate Valves—our No. 111—are also shown.



## They Give American Cyanamid a Much Longer Run for Its Money

The photograph above shows a few of the ALOYCO valves that handle the large daily output of sulfuric acid at American Cyanamid Company's Warners plant at Lin-

den, New Jersey. Though such valves themselves represent a small item of total plant investment, *entire plant operation depends upon them.*

### Continuous Use for Nearly 2 Years

*These ALOYCO valves have been in uninterrupted service 24 hours a day—without the slightest maintenance—since the unit went on stream April 8, 1949.*

Such performance explains why this American Cyanamid plant has for years standardized on ALOYCO

valves for corrosive service.

If your plant deals with corrosives or must guard everywhere against product contamination, think of ALOYCO valves—and Alloy Steel Products Company. Our engineers will welcome the opportunity to work with you.



**ALLOY STEEL PRODUCTS COMPANY, INC.**

1312 WEST ELIZABETH AVENUE, LINDEN, NEW JERSEY



THE BEAGLE is always ready for the hunt. He is accustomed to hunting in a pack and when in action waves his tail gaily and obeys all commands quickly and cheerfully. Beagles should stand no higher than 15 inches.



PEDIGREE CERTIFICATE THE AMERICAN KENNEL CLUB		
Name of Dog: <u>Beagle</u>	Sex: <u>Male</u>	Birth Date: <u>1911</u>
Color: <u>White</u>	Color: <u>Black</u>	Color: <u>Red</u>
Date Whelped: <u>April 15, 1911</u>	Place of Birth: <u>England</u>	
Owner: <u>John Doe</u>		
Parents:		
Sire: <u>John Doe</u> Dam: <u>John Doe</u>	Sire: <u>John Doe</u> Dam: <u>John Doe</u>	Sire: <u>John Doe</u> Dam: <u>John Doe</u>
Grandfather: <u>John Doe</u> Grandmother: <u>John Doe</u>	Grandfather: <u>John Doe</u> Grandmother: <u>John Doe</u>	Grandfather: <u>John Doe</u> Grandmother: <u>John Doe</u>
Great-grandfather: <u>John Doe</u> Great-grandmother: <u>John Doe</u>	Great-grandfather: <u>John Doe</u> Great-grandmother: <u>John Doe</u>	Great-grandfather: <u>John Doe</u> Great-grandmother: <u>John Doe</u>

The foregoing is a true copy from the records of the American Kennel Club.  
In witness whereof, the Official Seal is hereunto set, this 1st day of April, 1911.

In Boxes, too

## The Pedigree is Assurance of Thoroughbred Stock

A "PEDIGREED BOX" results from integrated production, with quality control by one management from timber to finished box.

That's why American Sugar Refining Company uses Union boxes to provide safe packaging for Domino sugar from refinery to dealers' shelves.

75 years of undisputed leadership in paper packaging goes into Union boxes. Tremendous forest resources feed five of the largest paper machines in the world, in a completely integrated pulp-to-container plant unmatched in America for size and production. And four modern boxplants, strategically located, serve you promptly and dependably.

Add all these *extra* assurances of consistent quality, dependable service and fair price and it's easy to see why every month more makers of national brand products are shipping in Union boxes.



Dependable Packaging  
Since 1872

## UNION Corrugated Containers UNION BAG & Paper Corporation

Principal Offices: WOOLWORTH BLDG., NEW YORK 7, N. Y.

Corrugated Container Plants: SAVANNAH, GEORGIA • CHICAGO, ILLINOIS • TRENTON, NEW JERSEY

To make a product  
as nearly perfect  
as fastenings  
can make it...

USE  
ALLEN HEAD  
SCREWS



ASK  
WARNER &  
SWASEY



The only place to use a cheap screw is when you don't care if it holds or not. Usually shearing or loosening costs thousands of times what you "save" on the cheapest fasteners.

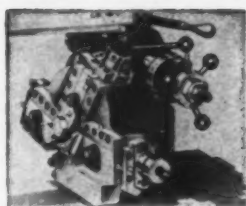
You pay no premium for genuine Allen Head screws—only enough to assure uniform strength and Class 3 fit.

Allen gives you the toughness of Allenoy steels, 100% Pressur-forming, the advantage of every proved threading method, quality control at every step, including automatic instrument controlled atmosphere heat treating.



**ALLEN** **ALLEN HEAD**  
MANUFACTURING COMPANY  
Hartford 2, Connecticut, U. S. A.  
NEW YORK, CLEVELAND, DETROIT, CHICAGO, LOS ANGELES

SOLD ONLY THROUGH LEADING DISTRIBUTORS  
Write the factory direct for technical information and descriptive literature.



This leading machine tool manufacturer uses Allen Head screws by the hundreds of thousands for compact design, assured holding power and maintenance of precision adjustments.

#### CONTOUR GRINDER FOR USE ON DRILL PRESS

New contour grinder, for use as an accessory on any drill press, is being marketed by George F. Grant Co., Inc., 18 Kempton Place, West Newton, Mass. Simply mounted on drill press column, the grinder readily swings out of the way when not in use. Using 2½ x 60" belts, it is said to be efficient and economical for job or production runs, and also a simple device for complex grinding of concave, convex parts and radii, for deburring, shaping and other uses. A special interchangeable spindle attachment



provides continuous roll form or cylindrical grinding. Felt wheel blanks may be shaped to meet varying requirements, and table may be moved to rear of driving pulley for large grinding operations. Special equipment available includes a spindle grinding attachment using ¾" to 2" diameter abrasive sleeves for internal surfaces. Grinder has variety of uses in tool, pattern and die making shops, production shops and woodworking shops. Printed matter available.

1 1 1

#### 1951 MODERN PACKAGING ENCYCLOPEDIA

Operational studies of fourteen of America's most efficient packaging plants highlight the 1951 Modern Packaging Encyclopedia, 22nd annual edition, 945 pages, issued by Breskin Publications, 122 East 42nd Street New York 17, N. Y. Flow charts, photographs and text describe the streamlined techniques developed by such successful packagers as Bristol Myers, Barricini, Johnson & Johnson, General Electric, The Texas Company and others. Each study deals with a different type of packaged product covering such factors as packaging design, package filling and closing, labeling, material selection, product protection inventory control warehouse, and point-of-sale display.

The book contains information on all known packaging materials, techniques and packaging machinery, along with directory of all known sources of supply for packaging machinery, services, material and equipment. Another feature of the 1951 edition is a tailored-to-measure study of the ways in which modern materials handling techniques and equipment can be used to streamline the packaging operation and to integrate it with related in-plant activities.

The new edition is priced at \$3.00 per copy in the United States, Canada, and abroad.

(Please turn to page 252)

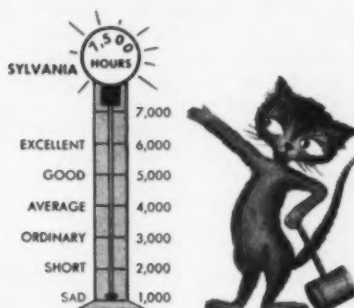
# Curious About Fluorescent Tubes?

## ...Try Sylvania for "EXTRA LIFE"

### RESULTS OF 2-YEAR TEST PROVED SYLVANIA BEST



Results of 2-year test of the most popular Sylvania tubes and those of other large manufacturers proved that the new Sylvania Fluorescent Tubes averaged 7500 hours.



In terms of longevity, this means that these Sylvania Tubes offered an "Extra Life" of 2500 to 3000 hours. This is equivalent to an entire extra year in offices and factories . . . two extra years in schools.

#### BRIGHTNESS MAINTAINED THROUGHOUT LIFE

In addition to long life, Sylvania Fluorescent Tubes maintained a remarkably high lumen out-put (brightness). Even at 7500 hours the Sylvania tubes under test were still extremely high in brightness and efficiency.

Naturally, test conditions for all tubes were identical. Continuing tests show no deviation from the original findings.

#### SAVE WITH SYLVANIA

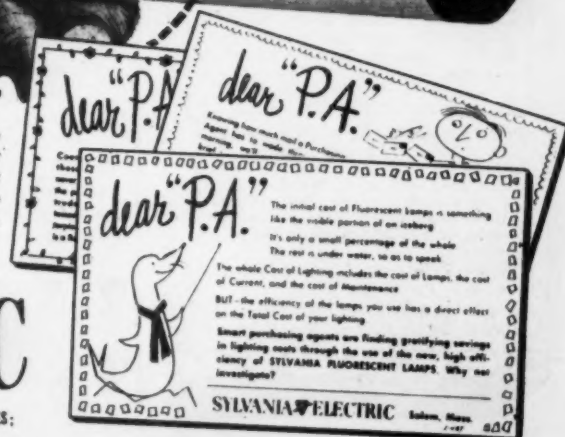
Figure how much Sylvania's long life means in dollars saved through fewer replacements and lower labor costs and you have the reason why scores of schools, stores and factories are switching to Sylvania Fluorescent Tubes. For full information about the full line of Sylvania Fluorescent Tubes address: Sylvania Electric Products Inc., Dept. L-2401, 1740 Broadway, New York 19, N. Y.

"EXTRA LIFE"



See Sylvania's  
"Beat the Clock"  
on CBS-TV

Are you receiving these money-saving reminder cards? They contain many Sylvania lighting suggestions worth acting on . . . and passing on!



## SYLVANIA ELECTRIC

FLUORESCENT TUBES, FIXTURES, SIGN TUBING, WIRING DEVICES; LIGHT BULBS; RADIO TUBES; TELEVISION PICTURE TUBES; ELECTRONIC PRODUCTS; ELECTRONIC TEST EQUIPMENT; PHOTOLAMPS; TELEVISION SETS



# LIKE AN ATOM-IC EXPLOSION

Just ONE 1/32" pin-hole size faucet LEAK  
MUSHROOMS into ATOMIC WASTE  
of approximately 76,000 gallons  
of water yearly—COSTING:

\$1013

@ \$1 per M cubic foot

If a hot water faucet, then actual  
FUEL WASTED heating 76,000 gallons  
costs approximately:

\$27.65 if coal (7,900 lbs.)

\$38.00 if oil (633 gals.)

\$50.63 if gas (67,500 cu. ft.)

STOP this needless WASTE during  
today's MATERIAL and MANPOWER  
shortages with 'SEXAUER' "Easy-Tites"  
that outwear ordinary faucet washers  
6-to-1, thus SAVING labor on 5 REPEAT  
repairs, PLUS water and fuel, while  
prolonging the life of SCARCE fixtures.

PAT'D.

## "EASY-TITE"

### FAUCET WASHERS

...a modern labora-  
tory triumph, are  
compounded from  
du PONT NEO-  
PRENE instead of rubber—to withstand  
DESTRUCTIVE HEAT common in  
present-day super-heating water systems  
—that formerly broke down washer's  
structure (tested to withstand 300°F.).

Built like a tire with fabric  
re-inforcement they resist the grinding,  
closing squeeze that SPLIT and MUSH  
ordinary washers out of shape...caus-  
ing LEAKS.

Through combining NEOPRENE and  
FABRIC RE-INFORCEMENT they  
OUTWEAR ordinary washers 6-to-1 on  
hot or cold TAPS—thus you slash water  
fuel and labor costs.

### THE NEW 'SEXAUER' CATALOG



Edition F, just out  
pictures over 2500  
TRIPLE-WEAR plumbing  
REPAIR parts and  
Pat'd. Precision  
Tools. It's today's  
accepted buying

guide for discriminating purchasing  
and maintenance personnel among thousands  
of top PLANTS, INSTITUTIONS and GOVT.  
AGENCIES that rely on SEXAUER repair  
materials. Send for your copy today!

Then too, there's a SEXAUER TECHNI-  
CIAN within quick call from coast-to-  
coast, who offers a special SURVEY  
service that sets up a schedule of the  
exact replacement parts required for your  
particular plumbing fixture regardless  
of make or age and without obligation.

A postcard will bring him and your NEW  
Catalog F promptly.

J. A. SEXAUER MFG. CO., INC., Dept. AP 11  
2503-05 Third Avenue, New York 51.

**SEXAUER**  
WORLD'S LEADING SPECIALISTS IN  
PLUMBING AND HEATING REPAIR PARTS

as advertised in THE SATURDAY EVENING POST

## ANNUAL MEETING OF S. A. E. TO BE HELD IN DETROIT

The annual meeting of the Society of  
Automotive Engineers is scheduled to be  
held in the Hotel Book Cadillac, Detroit,  
Mich., January 8, 9, 10, 11 and 12. W.  
Stuart Symington, chairman of the Na-  
tional Security Resources Board will ad-  
dress the annual dinner Wednesday night,  
January 10.

Program for the meeting provides ini-  
tially for the customary review of engi-  
neering progress in various fields of au-  
tomotive engineering, such as aircraft and  
aircraft power plants, diesel engines,  
fuels and lubricants, tractors and farm  
machinery, trucks and buses, passenger  
cars, transportation and maintenance, ve-  
hicle bodies, production and engineering  
materials. One session will be devoted to  
the possibilities of utilizing liquefied pe-  
troleum gases as fuel for motor vehicles,  
especially trucks and buses. The session  
on Tuesday night, January 9, will be  
given over to reports on and engineering  
reviews of unusual developments in pro-  
duction, with emphasis on acceleration of  
production processes and the application  
of advanced techniques.

Full information in regard to the meet-  
ing may be had from John A. C. Warner,  
secretary and general manager, S.A.E.,  
29 West 39th St., New York, N. Y.

1 1 1

## EFFECTIVE SUBCONTRACTING ESSENTIAL TO MAXIMUM PRODUCTION

American industry must make effective  
use of subcontracting if its current de-  
fense effort is to approach maximum  
production, according to Harry L. Er-  
licher, vice president of the General Elec-  
tric Company in charge of purchasing  
and traffic.

Speaking before a meeting of the  
American Management Association at  
the Waldorf Astoria, New York City,  
Mr. Erlicher explained subcontracting as  
the business practice of one company con-  
tracting for an overall job and then hir-  
ing other companies to do certain parts  
of that job.

He emphasized that the success of this  
practice depends as much upon the small  
subcontracting firm as upon the large  
prime contractor.

"During World War II, the teamwork  
and cooperation between subcontractors  
and prime contractors made possible the  
many production miracles that are his-  
tory today," Mr. Erlicher said.

"Now we are once again involved in  
another defense effort, and it is a matter  
of increasing importance that these sub-  
contracting programs be developed. Once  
these programs are established, it will  
make possible an almost immediate ex-  
pansion into maximum production in the  
event that industry is once again called  
upon to engage in full war production,"  
the G-E executive said.

"In our overall economy, the subcon-  
tracting system is an excellent means of  
spreading the benefits of large contracts  
on a broad geographical basis and in a

(Please turn to page 254)



LOCKED IN STRENGTH of Tri-Lok open  
steel flooring gives efficient load distribu-  
tion, even on long spans. Get maximum  
strength, light, and air with minimum  
weight. Available in Rectangular, Diagonal,  
and Super-Safety U-type Flooring, and  
Stair Treads of all kinds.

The Tri-Lok Company is also equipped  
to furnish riveted and Tri-Forge welded  
open steel flooring. Tri-Lok grating can be  
furnished in a variety of metals, including  
aluminum alloy, stainless steel, etc. Write  
for Bulletin MX1140.

## DRAVO CORPORATION

National Distributor for the  
Tri-Lok Company

Dravo Bldg., Pittsburgh 22, Pa.

Sales Representatives  
in Principal Cities



## Now Available



## DESIGNED TO SAVE YOU TIME & \$\$\$\$

The ONLY chemical directory that lists  
PRODUCERS AND MANUFACTURERS  
EXCLUSIVELY. Grades and purities are  
shown separately. Listings are entirely free  
and impartial.

An unprecedented market research work  
covering the American chemical industry,  
listing

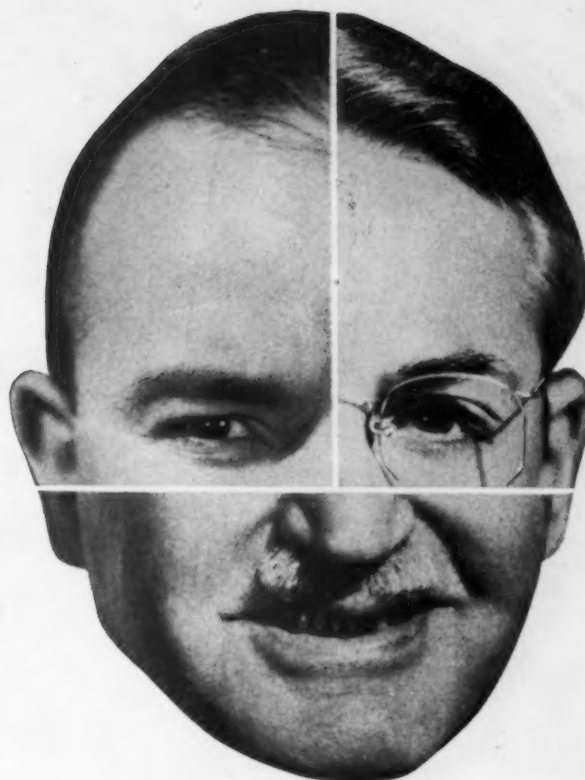
Chemical Raw Materials Dyestuffs  
Industrial Chemicals Fine Chemicals  
and their producers and manufacturers,  
with pertinent buying data including  
synonyms, trade names, form, packing,  
shipping regulations and shipping point  
of every grade.

Price: \$20 postpaid.

Write today to:

**McGraw-Hill Directory of  
CHEMICALS AND PRODUCERS**  
Dept. W, 330 W. 42 St., New York 18, N.Y.

## Who does a top P.A. see in his mirror?



**W**HEN a purchasing agent looks into his mirror he should see three people besides himself—a salesman, an engineer and an advertising manager.

The "salesman" in him wants component parts that have the quality to help sell the product. The "engineer" in him never forgets that he can supplement his company's engineering staff by buying from a manufacturer who offers a complete engineering service. And the "advertising manager" in him recognizes the advantage of being able to increase the saleability of his own product by calling attention to the use of component parts with wide public acceptance.

Taken together, *quality, public acceptance and service*

are an important part of the *value* you receive with any purchase. Singly or together, they far outweigh price in importance. To put it simply . . .

$$\text{Value} = \frac{\text{quality} + \text{service} + \text{public acceptance}}{\text{price}}$$

When you buy Timken® tapered roller bearings, you're sure of top quality, highly experienced engineering help and leadership in public acceptance.

Timken is your best buy in tapered roller bearings—by this or any other formula. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

### P. A. Notes:

**WE BEGIN AT THE BEGINNING!** From melt



shop to final inspection, the fine quality of Timken bearings is rigidly controlled. And no other bearing manufacturer in America, producing bearings to sell to the trade, makes its own steel.



**HELPING HANDS.** Timken's service organization is always ready to help you solve a tough bearing mounting problem or to devise ways and means to simplify assembly.

**3 WORD SALES STORY.** More than 1000 manufacturers help tell it by using "Timken bearing equipped" labels on their products. And millions of customers know it means "the best bearings money can buy".



**TIMKEN**  
TRADE MARK REG. U. S. PAT. OFF.  
**TAPERED ROLLER BEARINGS**



NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

# Make it Better

with

## GRAY IRON

### SAE or ASTM Plain or Alloyed

from

## Forest City Foundries

• Forest City planned production begins with an analysis of your casting needs and production requirements. Whether you furnish patterns, or drawings and specifications, we are prepared to get your job into production quickly.

With two large foundries mechanized with modern equipment, production moves fast — delivery schedules are met — quality is maintained.

Your castings department can be within the reach of your telephone when you make Forest City Foundries your casting headquarters.

Belt conveyors have replaced wheelbarrow and shovel in this modern installation of 18 molding stations.

This car conveyor system handles molds for continuous pouring.

Conveyors throughout the core-making areas quickly handle cores for faster, better baking.

An overhead trolley conveyor takes out hot castings for a long ride—to be cooled on the roof.

### The FOREST CITY FOUNDRIES Company

3800 WEST 37TH STREET • CLEVELAND 13, OHIO  
TELEPHONE TOWER 1-5040

(Continued from page 252)

minimum of time," he continued.

"This makes for minimum vulnerability in case our nation should ever be struck by a bombing attack. With multiple sources of supply, production of important war material—such as jet engines, guided missiles, gunnery systems, radar—will not be knocked out completely by the potential destruction of one area," Mr. Erlicher said.

"Both large and small companies benefit from the subcontracting system," he pointed out. "The large prime contractor needs the specialized techniques of the subcontractor in order to augment his own production program. On the other hand, the smaller firm can participate as a member of a team in major government programs, programs which he could not handle alone because of incomplete facilities," the G-E executive said.

"Furthermore, the subcontractor in this way can avail himself of the engineering, manufacturing, and procurement 'know-how' of the prime contractor and can eventually develop himself into the position of a potential prime contractor," Mr. Erlicher said.

As a specific example of a product dependent upon subcontractors, Mr. Erlicher mentioned the General Electric jet engine. Of the 25 major components of the engine, no less than 21 are produced by a total of 44 subcontractors widely separated on a geographic basis, he said.

1 1 1

#### FIRE-SAFE MOUNTING OF HEATING APPLIANCES

A fire in a printing and binding plant at Troy, N. Y., illustrates how heat may be transmitted through concrete and tile protection under a heating boiler and ignite a wood floor beneath, points out the National Board of Fire Underwriters, 85 John St., New York, N. Y., in Bulletin No. 138, F.P. File C48. An oil-fired heating boiler located in the basement was mounted on a wood floor as follows: A 3-inch layer of concrete was laid directly on the wood, and on top of this was one course of 4-inch hollow tile, on which was super-imposed another layer of 1-inch of concrete, on which the boiler rested. The fire was discovered in the sub-basement burning in the ceiling directly under the boiler, and was extinguished in its early stages by the fire department.

#### Gas Ranges Installed Improperly

In another case a wood floor under 3 gas ranges in a factory cafeteria was ignited. The cooking ranges were installed on a layer of 2-inch hollow tile with ends sealed, which rested directly on the wood floor. After only several hours of service smoke was noticed coming from under the ranges. Employees moved the ranges and found fire burning in the floor underneath, with the floor charred through in spots. The fire was extinguished with hand extinguishers.

In another instance a small gas-fired boiler supplying process steam was

(Please turn to page 256)



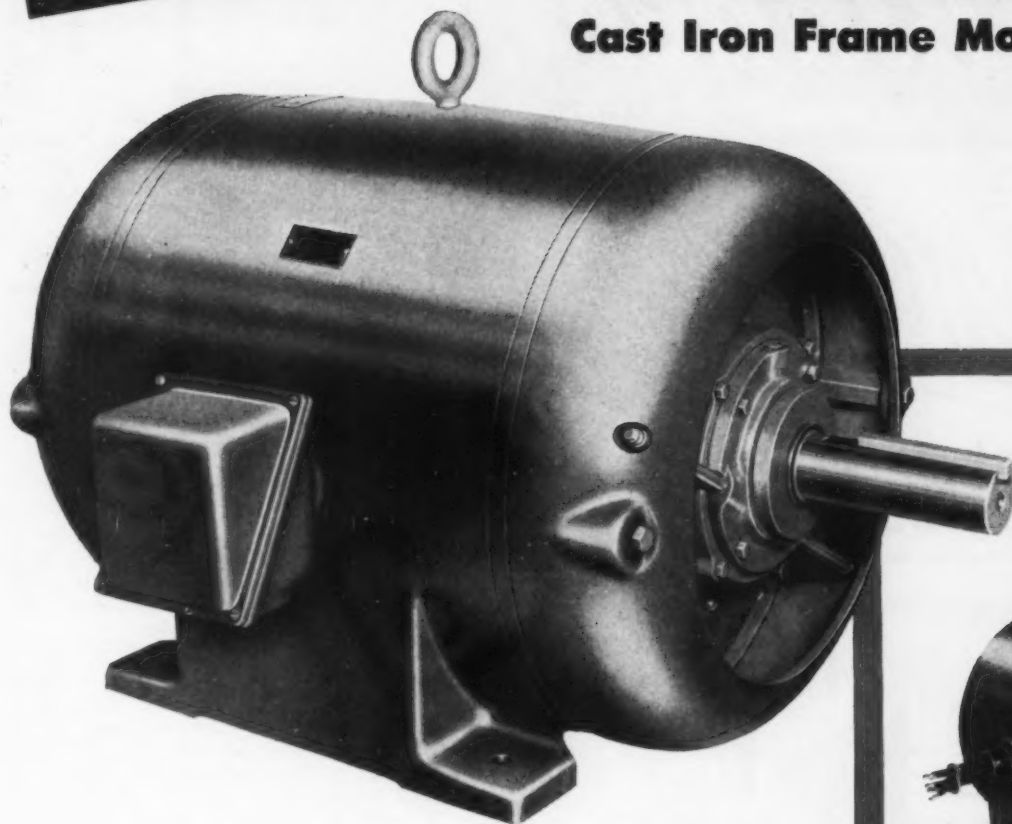
**Wagner**  
ELECTRIC MOTORS  
... the choice of leaders  
in industry

*corrosion is no problem—*

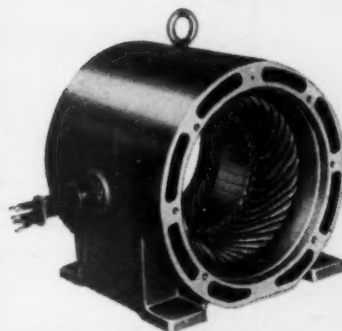
WHEN YOU USE

**Wagner**

**Cast Iron Frame Motors**



Rugged, one piece, corrosion-resistant, cast iron inner and outer frame, showing openings for ventilation.



**They resist the damaging action of acids, fumes, moisture and other destructive elements**

Wherever corrosion resistance is a "must" for motors—in chemical plants, oil fields, refineries, and industrial plants where tough operating conditions exist—Wagner Cast Iron Frame Motors are a sound choice.

They feature special varnish treated windings that resist acids and alkalis... a cast iron, gasket-sealed conduit box... and drain plugs in the endplates for easy removal of condensation from inside the motor. They are totally enclosed

in rust and corrosion-resistant cast iron—even the nameplate is made of corrosion resistant material!

Wagner Cast Iron Frame Motors are available in ratings from 5 to 250 horsepower, in both standard totally-enclosed fan-cooled and explosion-proof designs.

Bulletins give full information on these, and other motors in Wagner's complete line. Thirty-one branch offices, located in principal cities, are ready to assist you in any motor application problem.

**Wagner**  
Electric Corporation

1891 **WE** 1951

**WAGNER ELECTRIC CORPORATION**

6447 Plymouth Ave., St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES  
AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

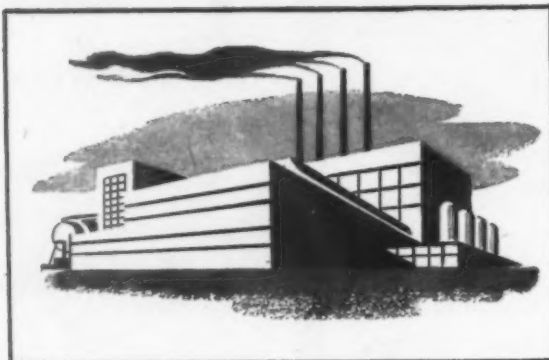
**BRANCHES IN 31 PRINCIPAL CITIES**

# Bendix-Skinner

ORIGINATOR OF MICRONIC FILTRATION

the *Finest*

**Way to Make  
Liquids Come Clean**

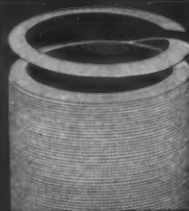


Nine times out of ten **Bendix-Skinner** filters will supply the "finest" answer to your problem. No magic—just the simple fact that **Bendix-Skinner** has developed entirely new and exclusive filtering techniques in twenty years of tackling the tough jobs. We'll welcome an opportunity to prove it. An inquiry costs you nothing and may save you much.

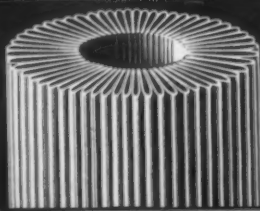
Over 350 Models providing filtration from  $\frac{1}{2}$  micron (.000019") upwards at flow rates from 1 to 5000 g.p.m.



Disc-type



Ribbon-type



Pleated-type

**SKINNER PURIFIERS DIVISION OF**

1503 TROMBLY AVENUE, DETROIT 11, MICHIGAN

Export Sales: Bendix International Division, 72 Fifth Ave., N. Y. 11, N. Y.



(Continued from page 254)

mounted on a layer of firebrick on a wood floor. The floor was ignited by heat conducted through the firebrick during a weekend when the boiler was carelessly left turned on and overheated. The fire was discovered by the watchman, and firemen extinguished it with hand equipment.

**Conclusions.** These cases show the importance of complying with recognized safety standards in mounting heating appliances. Details of safe methods of installation are given in the Building Code Standards of the National Board of Fire Underwriters for the Installation of Heat Producing Appliances, Heating, Ventilating, Air Conditioning, Blower and Exhaust Systems. When mounting appliances on combustible floors it is usually essential to provide adequate ventilation under the appliance in addition to the necessary insulation. Ventilation may be provided by legs or by using courses of hollow tile laid with ends open.

1 1 1

## RAYON CLOTH ADDED TO CHASE TEXTILE BAG LINE

Rayon cloth, a new material to the bulk packaging field, has been added recently to Chase Bag Company's regular line of textile bag products. Chase first introduced rayon bags in the Southwest as containers for feed, seed and other agricultural commodities. Because of their acceptance and increasing popularity in that area, they are now being distributed nationally.

Rayon, a naturally strong and smooth material, offers an excellent printing surface for direct multicolor brand printing. Whether printed direct to the cloth with water soluble inks or on paper bands adhered to the bags' circumferences, the material provides a valuable cloth premium for thrifty housewives' use. Rayon when washed becomes soft enough for making delicate clothing and household items such as blouses, shirts, pillowslips and even luncheon cloths and napkins.

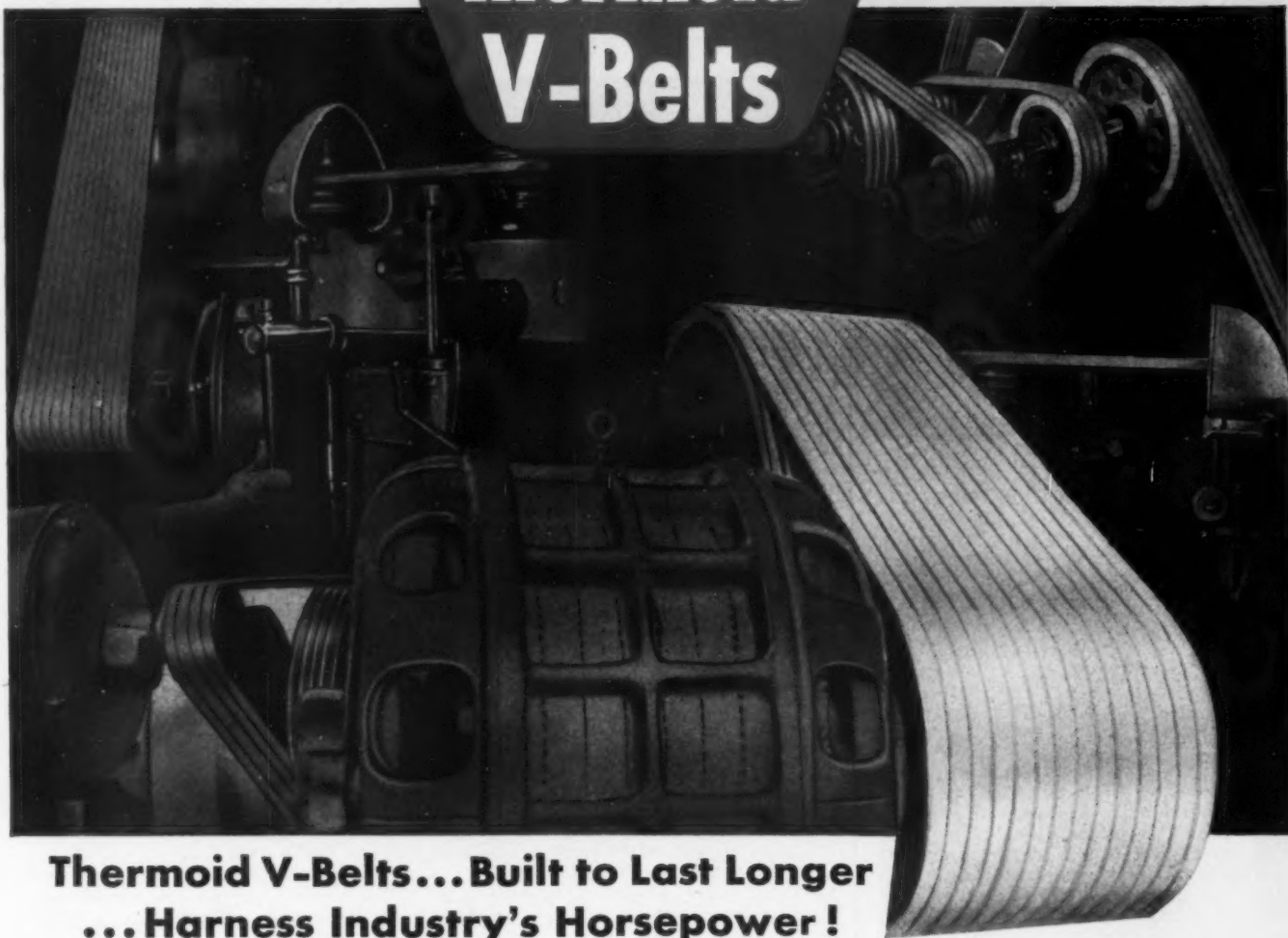
1 1 1

## PENNSALT ANNOUNCES THREE NEW FLUORINE CHEMICALS

The Pennsylvania Salt Manufacturing Co., 1000 Widener Building, Philadelphia, Pa., announces the availability in experimental quantities for evaluation purposes, of the first three of a series of organic sulfonyl fluorides. They are benzene-sulfonyl fluoride, p-chlorobenzenesulfonyl fluoride and m-nitrobenzenesulfonyl fluoride. The chemical properties and stability of these sulfonyl fluorides differ sharply from those of the analogous sulfonyl chlorides. The sulfonyl fluorides are thermally stable and are resistant to hydrolysis, chlorination, oxidation and elevated temperatures. They show an unusually wide range of solvent properties. In view of these and other properties they are recommended for evaluation as solvents, as heat transfer agents, as intermediates in the manufacture of dyestuffs and as chlorination media.

(Please turn to page 258)

# Specify Thermoid V-Belts



## Thermoid V-Belts...Built to Last Longer ...Harness Industry's Horsepower!

From the smallest fractional horsepower size to the largest multiple V-Belt... Thermoid top-quality serves the needs of every industry. Thermoid V-Belts mean longer-than-average wear, maximum power transmission without slippage and lowest over-all operating costs.

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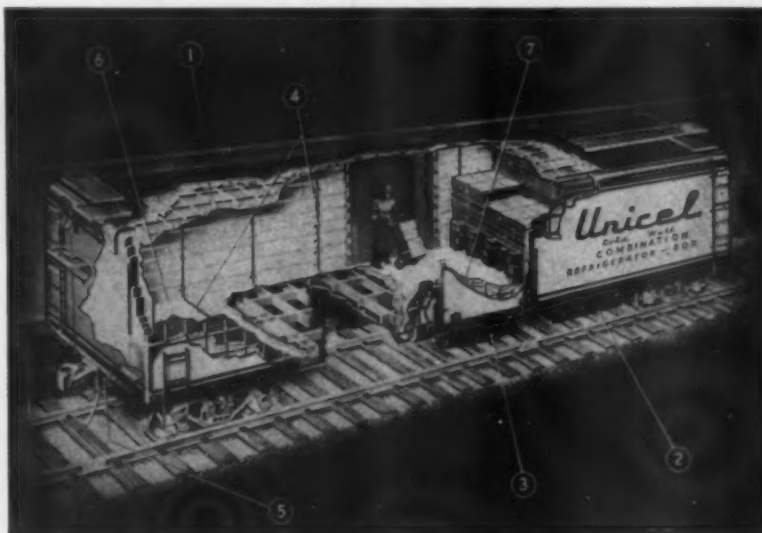
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Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**THE COLSON CORPORATION**  
ELYRIA, OHIO

## Unique New Freight-Refrigerator Car Called Answer to U. S. Rail Transportation Crisis

Pressed Steel Car Company, Inc., recently took the wraps off a new car it thinks is one answer to the worsening transportation crisis. It's the unique Unicel combination freight-refrigerator car, "the first major improvement in railroad freight car construction since 1898".

The one car will serve all needs—it can go in one direction with a refrigerated load and return with an ordinary load. This all-purpose usage gives the shipper and the railroad an all-time record car capacity, with 40% more floor area and almost 50% more pay load.



Cutaway view of the new "Unicel"

Railroads are beset with many problems, and the number is increasing. More goods must be shipped more rapidly, and there are just not enough cars. And the steel to build them is getting scarcer. Pressed Steel says the "Unicel" has these advantages over conventional cars to help meet some of those problems: it will carry a bigger payload when full; is lighter to pull when empty; will last longer; uses 20 tons less of steel; can be built faster, easier; is cheaper for railroads; is easier to clean and keep clean.

One big secret of the car's advantages is the cellular laminated super-strength plywood construction. (1 on photograph). It is molded and pressed under tremendous electronic energy into a single unit structure, lighter yet stronger than steel in this usage. Frigidaire mechanical refrigerating unit (2) is powered by diesel fuel en route (3), by electricity at sidings and warehouses.

Special strapping braces and fastens lading more securely to permanent, built-in tie-downs (4), cutting down shifting  
(Please turn to page 260)

## Rubber Situation Acute

Far Eastern situation endangers supply of natural rubber  
Uses of both natural and synthetic rubber multiply  
Notable uses are in paints and road making

Political instability in Indonesia and Communist threats in Malaya and Indo-China threaten 90 percent of this country's natural rubber supply. The American Society of Mechanical Engineers was told at its New York meeting. Although synthetic rubber has replaced natural rubber in many fields, Miss Leora E. Straka, research librarian of the Goodyear Tire and Rubber Company, said, the rubber situation today is acute.

This is reflected in the price of natural rubber, she told the ASME's 1950 annual meeting in the Hotel Statler. In June, 1949, Miss Straka said, natural rubber was 16 cents a pound, one year later it was 35 cents and by August of this year it had reached 65 cents a pound.

And all the while, she said, the uses of rubber, both natural and synthetic are multiplying. The development of synthetic rubber during World War II advanced to such a stage that the natural variety can no longer compete with the synthetic product in many fields, Miss Straka said.

Notable uses of rubber today, she said, are its use as a leather improver, in paints and in road construction.

"Latex and rubber emulsion paints are now available as paints of highly acceptable quality," Miss Straka said. "The inherent advantages of emulsion paint systems are freedom from toxic solvents, good washability, short drying time, good  
(Please turn to page 262)



Many makers of every type of earthmoving equipment consider Sterling Bolt Company a primary source of bolts, nuts and screws . . . dependable fasteners to build rugged, superior products.

Many purchasing agents (not only in that industry but in any manufacturing activity using nuts and bolts in volume) specify Sterling Bolt products as a step in efficient production planning.

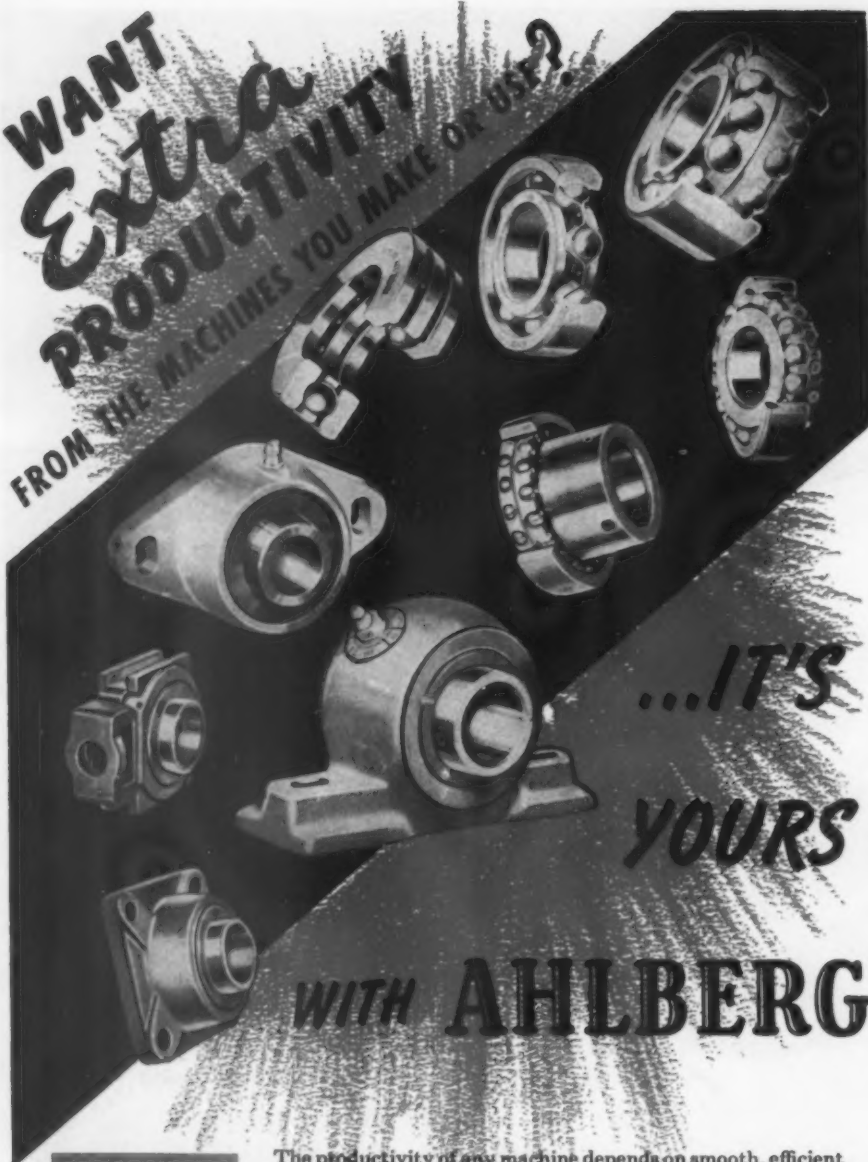
For 30 years Sterling Bolt Company has been helping industry make better products for more people.

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rugged, exactly bal-  
anced, deep grooved ball  
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and sphericity to within  
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(Continued from page 258)

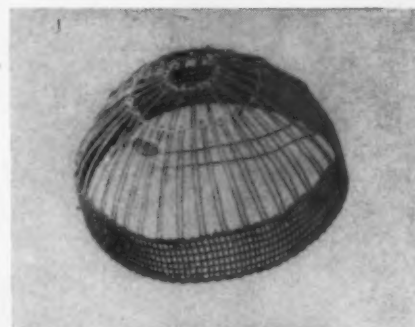
and damage. A rubber sleeve mounted to the car's end-couplers cushions and absorbs road shocks (5).

Hinged steel floor racks make cleaning the car an easier job. Sanitary interior with rounded corners (6) and smooth, flush interior door and floor construction (7) cannot pick up dirt as easily, and can be washed down more efficiently than in ordinary cars.

Pressed Steel, now using a pilot work-force at its Hegewisch, Ill., plant, says it could turn out 50 cars a day on a 5-day week. Delivery time for the new cars will take about six months.

1 1 1

**FLEXIBLE HEATING ELEMENT**



To meet the need for heating devices of complicated design, the Electroweave Manufacturing Co., Inc., 30 Rockefeller Plaza, New York, N. Y., has developed a unique heating system that can be woven into flexible tapes, cylinders, spheres and various odd shapes. The accompanying illustration shows hemispherical heating unit designed for installation on outside of metal dome. The element is dimensionally so thin that it requires very little space, eliminating the need for designing apparatus around the heating element. Instead the heating element is fitted after the apparatus is designed. By the unique use of nylon reinforced cords, spun glass and silicone insulating coverings, and various methods of circuiting, it has been possible to apply the Electroweave units under conditions that formerly required expensive and cumbersome equipment. The elements operate in the infra red range at high efficiencies, carrying watt densities of from 15w per sq. ft. to 15w per sq. inch.

1 1 1

**INFLATION AND HOSPITAL  
SUPPLIES**

Some idea of how inflation is affecting the cost of hospital supplies, says the Bureau News, Hospital Bureau of Standards and Supplies, New York, is shown by a study made by one of its member hospitals covering the period from July 1st to November 1, 1950. Price by a group of commodities increased on a weighted average of about 20%. It is conservatively estimated that rubber gloves went up 20%, paper goods 15%, linens 30%, laundry soap 70%, surgical dressings 20%, glassware 15%, and canned goods 15%.



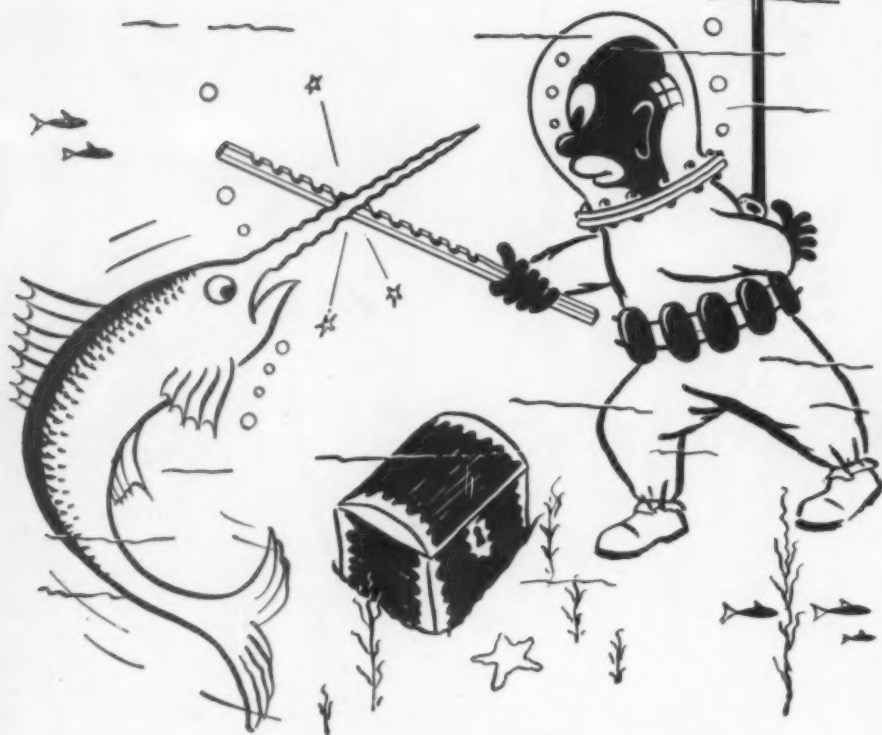


GRAPH BY RUSSELL C. AIKINS

**Portrait of a man in love** (with his job) . . . a real Bristol Brass mill man, "with copper and spelter in his veins." Mark of such men is a deep personal concern, over and above the line of duty, for the *solid honesty* of the sheet, rod and wire that goes out to the world from *their* mill . . . The Bristol Brass Corporation, Bristol, Conn., (since 1850). Offices and warehouses in Boston, Chicago, Cleveland, Dayton, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

Another insight into the full meaning of: **"Brass made Bristol-Fashion"**

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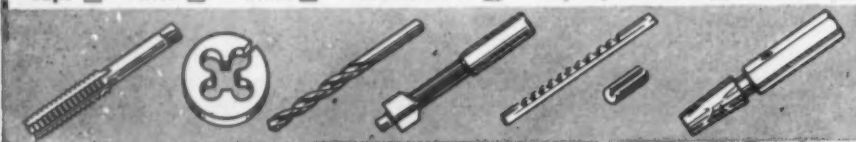
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Taps ☐ Dies ☐ Drills ☐ Counterbores ☐ Keyway Broaches ☐ Gages ☐



(Continued from page 258)

application characteristics and good shelf aging properties.

"Paints of this type have been formulated in both flat and semi-gloss finishes and are not limited to interior applications. Preliminary results for exterior exposure tests indicate that the behavior of pigments in these emulsion paints is similar to their behavior in oil paint systems."

The durability, waterproofness, and abrasion resistance of leather can be increased by impregnation with a solution of natural or synthetic rubbers, and then vulcanizing with an accelerator of the dithiocarbamate type, she said.

"Rubberized coatings can now be applied to all the underneath parts of the car body, and the noise from flying stones can be effectively deadened," she said. "The inside of the hood can also be treated with this rubberized coating so that engine noises are muffled and vibration is lessened."

"Since rubber bearings have been widely used in marine service, tests have been developed for the measurement of their coefficient of friction and wear. By the suitable selection of elastomers and compounding ingredients, materials for bearings with lower coefficient of friction and longer life have been developed."

#### Addition of Rubber Increases Life of Road

"The use of rubber in road construction is continuing to stimulate further investigations of technologists and engineers," Miss Straka stated. "The results of tests to date indicate that rubber added to asphaltic paving material increases the life of the pavement, requires less maintenance, increases the elasticity of the pavement, reduces its susceptibility to temperature variations, makes the pavement less brittle at low temperatures and materially increases the coefficient of friction of the surface area."

"Within the past year additional experimental roads have been laid in New York City, Singapore, London, Canada, Texas and Minnesota. Rubber surfaces have also been extended to playgrounds, tennis courts and airport construction."

#### Improvements in Latex Production

The most outstanding advancement in the field of frothed latex sponge within the last year, according to Miss Straka, is the production of a more uniform structure as a result of improvements in continuous frothing units. Other advancements include smaller bubble size by controlled beater speed, along with improvements in processing methods and compounding techniques. The incorporation of glass fibers serves as an extender and reinforcing agent, and causes articles to shrink less in the mold.

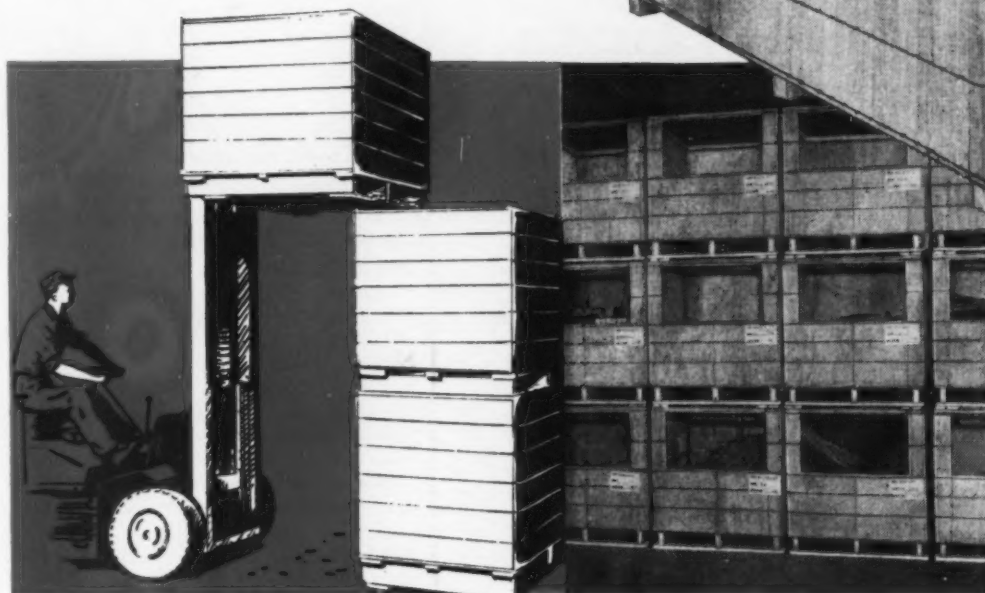
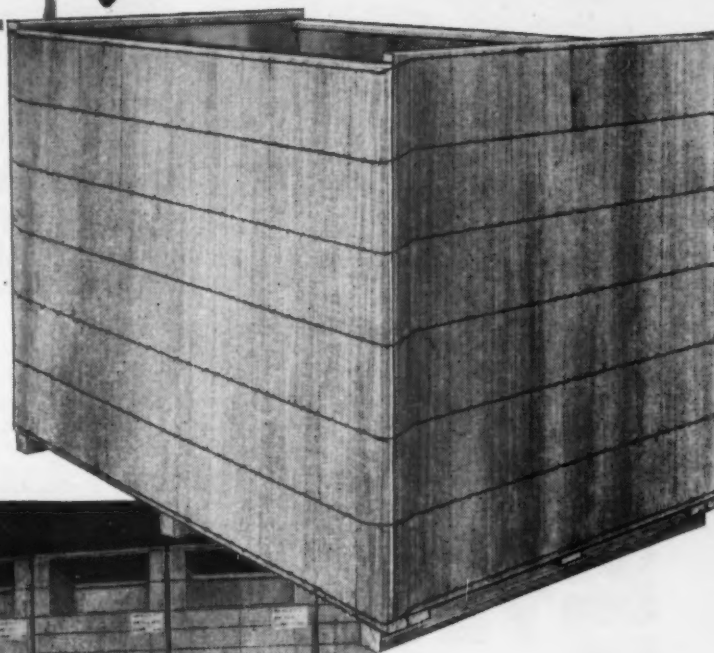
"A flow casting process for latex has been developed whereby suitably compounded latex containing curing agents is poured into a plaster mold," she stated. "A rubber skin forms on the plaster wall, and water and the non-rubbers in solution are absorbed by the plaster. After pouring off the excess latex, the unit is dried and cured."

(Please turn to page 264)

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*provide...*

**THE ANSWER TO  
MATERIALS HANDLING  
PROBLEMS...**



**...AND THE  
ANSWER TO  
STORAGE  
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The Generalift Pallet Box is new... it has had a truly amazing acceptance among practically all types of manufacturers! It sharply reduces costs because *one* workman, fork-lift truck, and Generalift Pallet Box, do the work of many! If you are interested in sharply cutting your materials handling and storage costs, write today for complete information on this versatile container.

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This colorful booklet illustrates and describes the many advantages of the Generalift Pallet Box. We will be glad to mail upon request.



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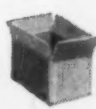
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General Wirebound Crate



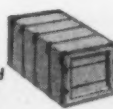
General Nailed Box



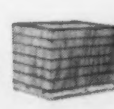
General Corrugated Box



General Cleated Corrugated Container



General All-Bound Box



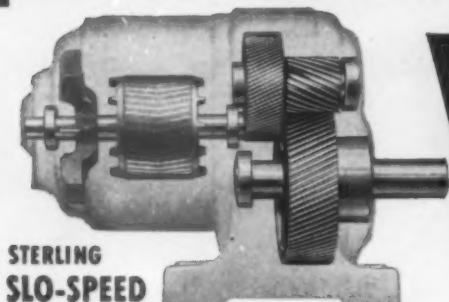
Generalift Pallet and Pallet Box



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DEDICATED TO THE PROMOTION OF INTERNATIONAL TRADE BY  
THE GOVERNMENT OF CANADA

(Continued from page 262)

Within the past year "cold rubber advanced from the batch process to the continuous polymerization process, Miss Straka said. Among the advantages of this process is the continuous blending of the ingredients which gives a more uniform latex and a product of higher and more uniform quality.

### New Types of Rubber

Among the new types of rubber described by Miss Straka was vulcollan, a recently introduced highly elastic material that may find application in protective coatings. Neoprene Type W, another newly developed rubber, is more stable than other neoprene products and is characterized by greater resistance to compression set.

"Depolymerized rubber, which has been under continuous development for a number of years is now commercially available as DPR, a thick, flowable, all-rubber liquid," she said. "Depolymerized rubber compounds can be spread, troweled, or cast into molds and vulcanized in hot air at atmospheric pressures."

1 1 1

## NATIONAL BUREAU OF STANDARDS ISSUES ANNUAL REPORT

A summary of scientific investigations carried on at the National Bureau of Standards during the fiscal year 1949 is contained in a 101-page illustrated booklet just published by the Bureau and now available from the U. S. Government Printing Office.

Scientific activities at the Bureau during the year were conducted by 13 divisions concerned with electronics, applied mathematics, atomic and radiation physics, radio propagation, electricity and optics, metrology, heat and power, chemistry, mechanics, organic and fibrous materials, metallurgy, mineral products, and building technology. A fourteenth division dealt with commodity standards. Of the numerous and varied projects carried on by approximately 100 sections within these divisions, those of greatest general interest and widest application have been selected as typical for description.

Included are the development of an atomic clock controlled by the constant frequency of vibration of the atoms in the ammonia molecule, the production of a synthetic mica having essentially the same valuable properties as the corresponding natural mica, the development of a practical method of preparing extremely thin sections of organic materials for study with the electron microscope, the perfection of a process for increasing the wear of sole leather by impregnating it with rubber, and the determination of the magnetic moment of the proton.

NBS Miscellaneous Publication 198, *Annual Report of the National Bureau of Standards for 1949*, 101 pages, 27 half-tone illustrations, 75 cents a copy, is available from the Superintendent of Documents U. S. Government Printing Office, Washington 25, D. C. Add one-third publication price for foreign orders.

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Despite the fact that even some brass parts have been processed, both barrels are in excellent shape today and will continue to give many more profitable hours of service.

And long service is what you get with Rolock barrels, baskets, furnace muffles, pit type baskets, brazing trays, racks, etc., for all heat treating and finishing operations...built to handle larger loads, save time, improve work at lower costs. Try us... we make good!

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# FLOOR BRUSH

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### NSRB TO SET UP CONSERVATION COORDINATING COMMITTEE

As part of an all-out drive for conservation in the field of mobilization planning, the National Security Resources Board will re-create a Conservation Coordinating Committee such as operated during the last war, it was revealed at the 1950 annual meeting of The American Society of Mechanical Engineers in New York City.

Howard C. Coonley, chief conservation planning specialist, for the NSRB, told the ASME that W. Stuart Symington, NSRB chairman, agreed to the creation of the conservation committee under the chairmanship of the NSRB several weeks ago. Mr. Coonley said the role of the committee will be to initiate and develop broad unified programs of conservation in the mobilization effort.

The committee will include representation from all three divisions of the Department of Defense, the Munitions Board, the National Production Authority and other Government departments and agencies that have a major concern with materials, facilities, manpower and production—a total of 19 departments and agencies.

#### Important Activity

"I have been spending my time for these several weeks visiting the heads of these departments and agencies so that the purposes and programs of the Conservation Coordinating Committee should be understood and the appropriate representatives selected when the invitations from Mr. Symington are received," Mr. Coonley said, adding that he was happy to see that the plan has met with enthusiastic approval.

Mr. Coonley said the setting up of this committee was the most important activity that will be undertaken by the National Security Resources Board in the vital field of conservation. Declaring that conservation is not an American characteristic, he said that we lack "a spirit of thrift". He added, however, that it should not require a war or even a threat of war to make us aware of the necessity to save.

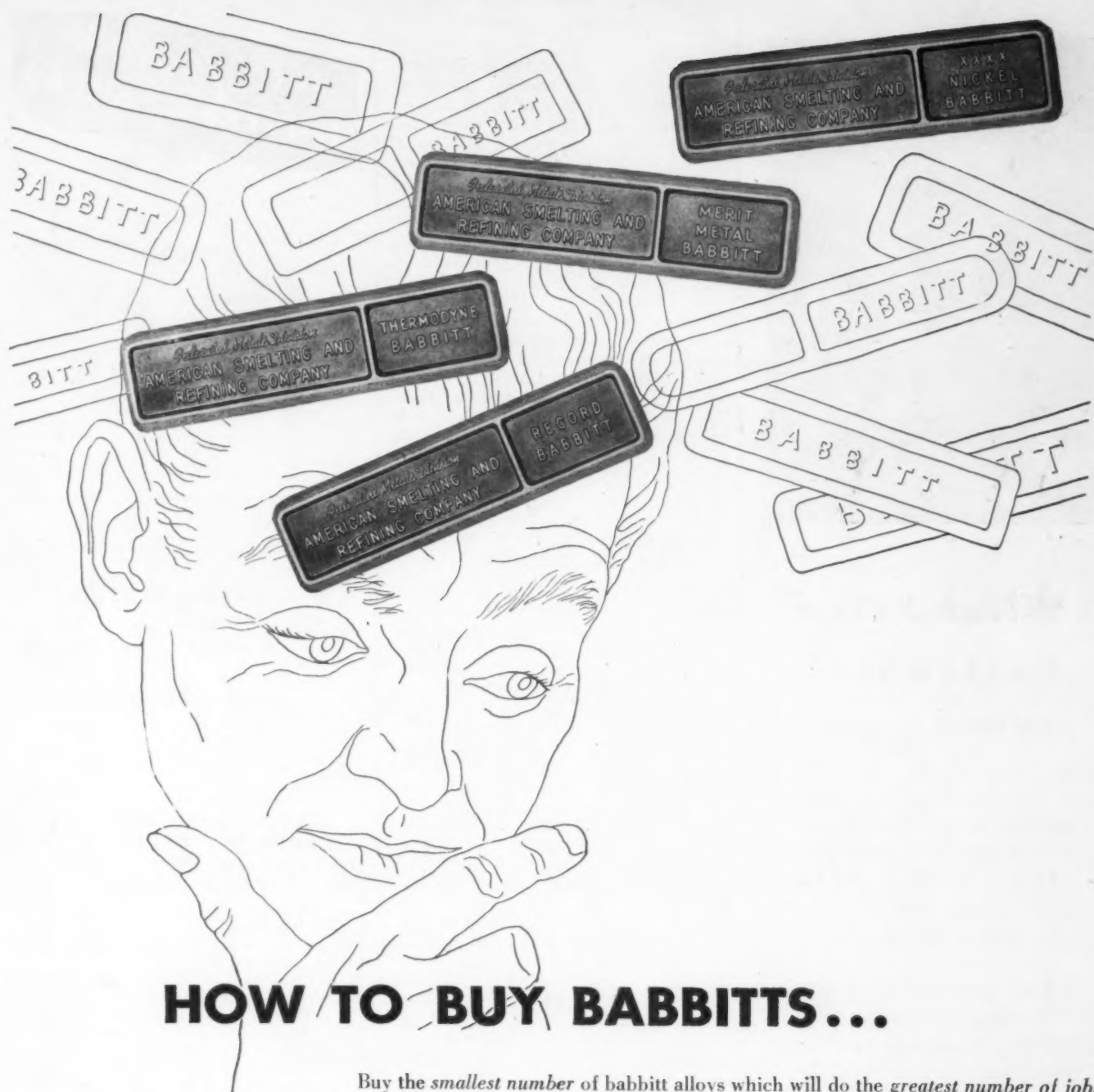
"Our people have ingenuity, adaptability and driving power," he said, "but we are not by nature accustomed to make much out of little to see how far we can stretch the cloth which is within easy reach."

#### Important Ingredient

In the present crisis, said Mr. Coonley, conservation is the ingredient that will "expand the output of our mills and our machinery that urgently important additional amount which is needed to take care of civilian as well as military requirements, and thereby safeguard our republic and assure the survival of the democratic nations of the world, whether our destiny be the terrors of another war or the blessings of long years of peace."

Conservation in mobilization planning may be divided into six broad categories, he said. They are: standardization, specifications and simplification; measures to determine and safeguard supplies of critical materials; development of substitutes (Please turn to page 268)





## HOW TO BUY BABBITTS...

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Federated's Big 4 Babbitts offer a practical range of characteristics to answer virtually every white metal bearing need in production or maintenance. Each one is capable of doing a variety of jobs... no need to buy more than the Big 4!

"Thermodyne" and "XXXX Nickel" are tin-base babbitts for heavy loads at high-speeds... "Merit Metal" and "Record" are lead-base babbitts for lighter work at more moderate speeds.

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JANUARY, 1951

Want Additional Product Information? See Page 19.

267



## What Price Fasteners?

### First cost or Final cost?

In terms of your over-all product cost, the price of any fastener is low. But a low price may be a high cost if a fastener keeps assembly time and reject ratios high.

A good fastener—uniform, reliable, and right for the job—can save its price many times over. Scovill makes good fasteners.

Scovill fasteners are made on special order only; no "bin" stock is carried. They are "custom-made" for the job.



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Los Angeles • Cleveland • San Francisco

(Continued from page 266)

tutes wherever necessary and possible; salvage and savings at the source; cataloging of supplies under a system of standard identification to avoid duplication and waste; international cooperation in conservation measures.

Mr. Coonley said the NSRB is giving "every encouragement" to the Standards Agency of the Munitions Board in its work of reviewing several of their standards for drawings and drafting room practices and planning an expansion of these standards. He said the NSRB could conceive of "no conservation measure that would prove of greater value to the mobilization effort than a unified set of industrial-military standards in this important area."

"Had there been available in World War II such a group of standards, millions of dollars and hundreds of thousands of skilled man-hours would have been saved," he declared.

1 1 1

### MARKETERS STILL HAVE TO DO A LOT OF SELLING

"In spite of the seller's market, I think that people engaged in marketing should feel that they still have to do a lot of selling; the companies that feel that they can get along without salesmen are making a mistake, for we need their attention and help", declared Donald H. Lyons, purchasing agent, Johns Manville Corp., New York, in an address at luncheon meeting of the New York Chapter of the American Marketing Association. "In the not too distant future I think there will be better selling again."

The purchasing agent depends upon those who sell a great deal for product and material information, he stated, adding that there is room for a great deal of improvement in some of the promotion literature that flows across the purchasing agent's desk in volume. Such material should stick to fundamentals, and present its subject clearly, he said. "The purchasing agent, I assure you, will appreciate the little things that will make us respond better to what you are trying to do. I am not smart enough to know everything there is to know about everything we buy. We jump from motor trucks to cotton goods, and tin cans to portland cement through some 4000 different items. Except where the purchasing agent is a specialist, he must have help from people like you," he said.

Purchasing agents, he said, are accused of always wanting something different. "The real problem we face is trying to sell you and your salesmen on how to get us what we need", he continued. "Many salesmen are unresponsive," he said. "It may be lack of information, or it may be that they can easily sell all they have to sell. A great deal of the purchasing agent's trouble seems to lie in the inertia or inability of the salesmen to take our story back and fight it through—in other words, get us what we want."

Concluding his talk he said the only difference between the man selling and the man buying is the width of the desk.

(Please turn to page 270)



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Manufacturers of:

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Machinery, TRI-POWER Die Presses,  
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Fortune favors the man well-informed in his own profession. You can get the full benefit from the wealth of valuable information in PURCHASING by receiving it personally each month. Just fill in, clip, and mail this coupon. PURCHASING, 205 E. 42nd St., New York 17, N. Y.

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**CW**  
distributor  
believes...*

**That good service pays**



Your Spang CW Pipe Distributor makes your problems his when you call him. He knows that good, quick service means satisfied, lasting customers. And he's more than willing to go out of his way to see that you get prompt, efficient service in emergencies.

He also knows that it pays to handle products of fine quality. That's why he stocks and recommends Spang CW Pipe. He knows that Spang CW gives long, trouble-free service. One of the reasons why this is true is because of the final finishing and descaling operations in its manufacture. This assures a smooth, scale-free inside surface that minimizes dangerous and costly valve clogging.

For dependable, quick service call your Spang CW Pipe Distributor the next time you need steel pipe, fittings, fixtures, valves or other piping materials. You'll like his philosophy . . . good service pays.

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Division of The National Supply Company

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District Sales Offices: Atlanta; Boston; Detroit; Houston;  
Los Angeles; New York; Philadelphia; Pittsburgh; St. Louis

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**QUALITY**

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recognized  
wherever pipe  
is used*







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Front and side  
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**All You Need in Plastic Face  
and Eye Protection is made by**

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*FeatherSpec\* for  
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*Protecto-Shield\*  
Full face protection*



These three types of protective devices, all with one-piece plastic lenses or visors and each with many variations, give you a wide selection to meet specific requirements of work hazards. Their light weight and comfortable fit insure workers' willingness to wear them for long hours on the job. Complete information on plastic protection and other eye and respiratory safety equipment is available in the new WILLSON catalog. Get your copy from our nearest distributor or write direct to WILLSON PRODUCTS, INC., 221 Washington Street, Reading, Pa.



\*T.M. Reg. U.S. Pat. Off.

## AIM TO UP OUTPUT OF MANILA HEMP FIBER

Rope, a vital item in Western Hemisphere defense, is drawing five top-flight scientists to Costa Rica.

The five, all from Armour Research Foundation of Illinois Institute of Technology, Chicago, are Walter J. Armstrong, assistant director of the Foundation's International Division; Norton F. Gurley, research chemist; John D. Keane, chemical engineer; William B. Bobco and Frank MacFall, both research design engineers.

The objectives of the research program, authorized by Congress and undertaken upon request of the Reconstruction Finance Corporation, are to aid in hiking the output of Manila hemp fiber in Central America by increasing production efficiency and to develop new uses for waste products from the process.

Manila hemp is derived from the abaca plant—a plant related to the one that sprouts bananas. The United States now relies heavily upon the Philippine Islands as a source for this fiber.

The Armour scientists left Chicago November 19 to spend at least two weeks in Costa Rica at plantations operating under United Fruit Company management. Following this initial survey, their technological finds will be put to use in this and other Central American countries.

## BUSINESS BOOMS AND DEPRESSIONS 1951 EDITION

The high spots and the low points of the American Economy since 1796 are graphically shown in the 1951 edition of the "Business Booms and Depressions" chart now being distributed by the United States Steel Supply Company, warehousing subsidiary of U. S. Steel.

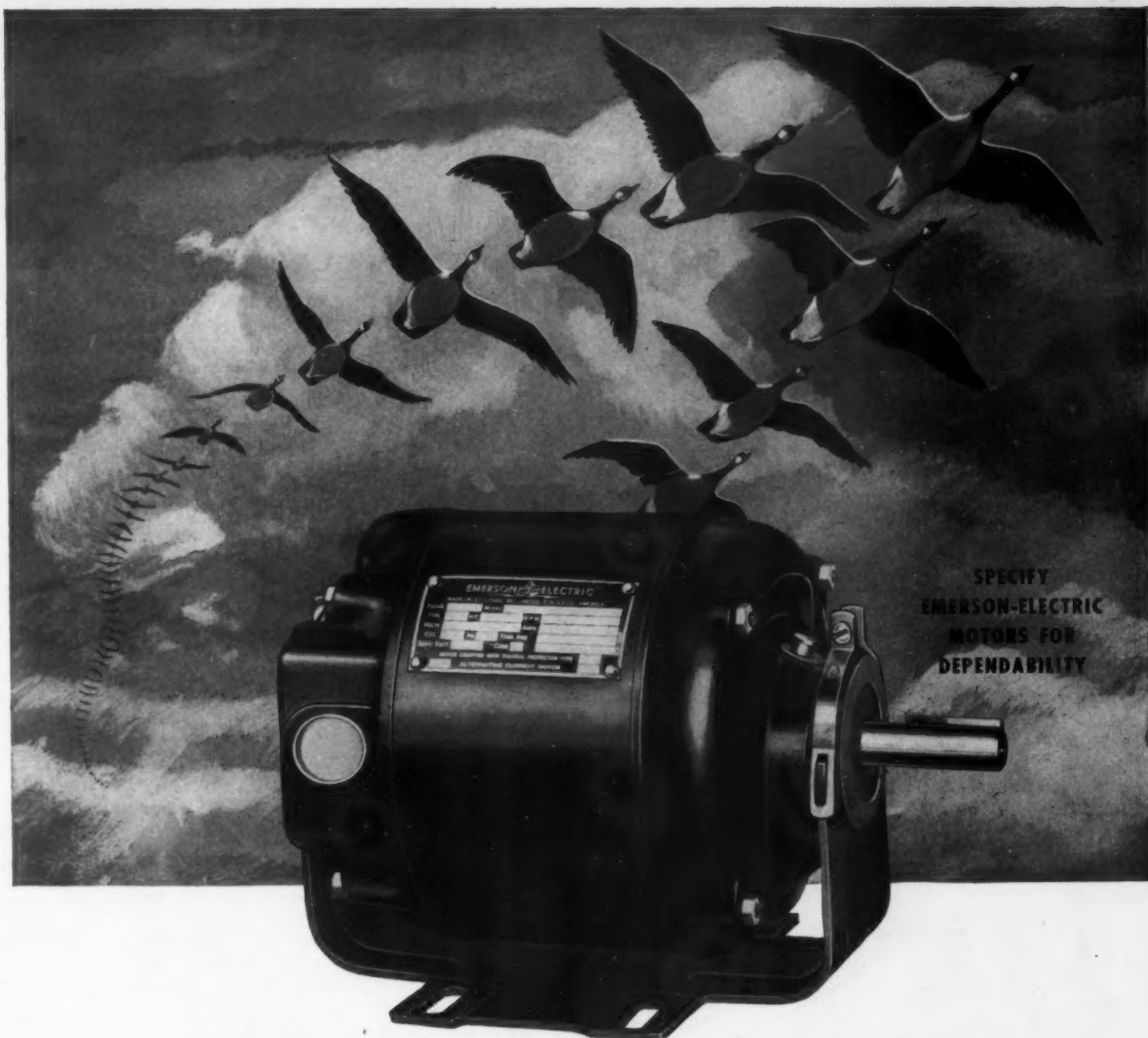
Several new and timely features have been added to this year's edition, including census significance, employment and unemployment, wage rates, retail sales and per capita income. Of particular interest are indices which show the effect of war production on the nation's economy. As usual, the major trends have been brought up to date. Among numerous things, it shows that at present, the dollar value is 57 cents in terms of the 1939 dollar.

Copies of the chart are available on request to United States Steel Supply Co., Dept. M.D., 208 South La Salle St., Chicago 4, Ill.

## PACKAGING EXPOSITION TO BE HELD IN ATLANTIC CITY

The 20th National Packaging Exposition is scheduled to be held at the Auditorium in Atlantic City, April 17-20, 1951, according to the American Management Association, sponsors. Machines, equipment and services used in packaging, packing and shipping will be on display, and it is expected that the show will be even larger than ever before in both area occupied and number of visitors.

The AMA Packaging Conference will be held in conjunction with the show.



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EMERSON-ELECTRIC  
MOTORS FOR  
DEPENDABILITY**

## Symbol of Dependability



**Write for these Emerson-Electric  
Motor Data Bulletins**

Appliance and equipment manufacturers, with applications for motors of 1/20 to 5 h.p., can profitably use these authoritative reference guides. Specifications, construction details and performance data are included for the following types:

- ☐ No. 106-A Capacitor-Start Motors
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- ☐ No. 106-C Integral Motors
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- ☐ No. 106-F Jet Pump Motors
- ☐ No. 106-G Blower Motors

In earning a reputation for dependable performance there is also the opportunity to demonstrate leadership. Only a very few accept the challenge. You can point out one or two leaders, in every line of manufacture, whose success resulted from their products having become symbols of dependability.

Scores of America's best known manufacturers depend on Emerson-Electric motors to power their products. They know that customer satisfac-

tion and dependable performance go hand in hand.

A background of 61 years of motor manufacturing experience stands behind Emerson-Electric motor design and production, offering the right motor for every job, in ratings from 1/20 to 5 h.p.

Consider the advantages of Emerson-Electric motors when planning your long-range program for top-flight leadership ratings on your equipment. Send for complete literature today.

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Helical Gears • Bevel Gears • Ratchets • Worm Gears • Spiral Gears  
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IN ALL MATERIALS, METALLIC & NON-METALLIC

**PERKINS MACHINE & GEAR company**  
WEST SPRINGFIELD, MASSACHUSETTS

### Every Purchase Is an Emergency

(Continued from page 71)

tage of the urgent need for the material. However, in many years of buying, I have experienced very few of these attempts. As in other lines of business, we try to do business only with reputable suppliers, and we have spent a lot of effort in building up a reliable and cooperative list of vendors.

In addition to the special parts required for the ship, the buyer must keep a constant flow of inventory items coming into the storeroom — bolts and nuts, valves and fittings, packing and lumber, steel products of all kinds and shapes, and other items too numerous to mention. The inventory cards at my company (a relatively small repair yard) list more than 10,000 separate items, and in these days of shortages replacement orders soon reach the emergency stage.

#### Necessary Requirements

What are the requirements for meeting these emergencies?

1. *Know your sources of supply!* And be constantly on the lookout for new sources that may prove helpful. The salesman with his new line of products, his wide contacts, his ideas and ever-ready conversation, can be one of your best allies. See him today, for tomorrow you may need his assistance on that emergency order.

Cultivate the friendship of other purchasing agents, especially through working with them in local and national Association affairs. When you are unable to secure the material from your regular source, call a fellow P.A., and almost invariably you will receive valuable leads. And don't forget to reciprocate when you are called for like information.

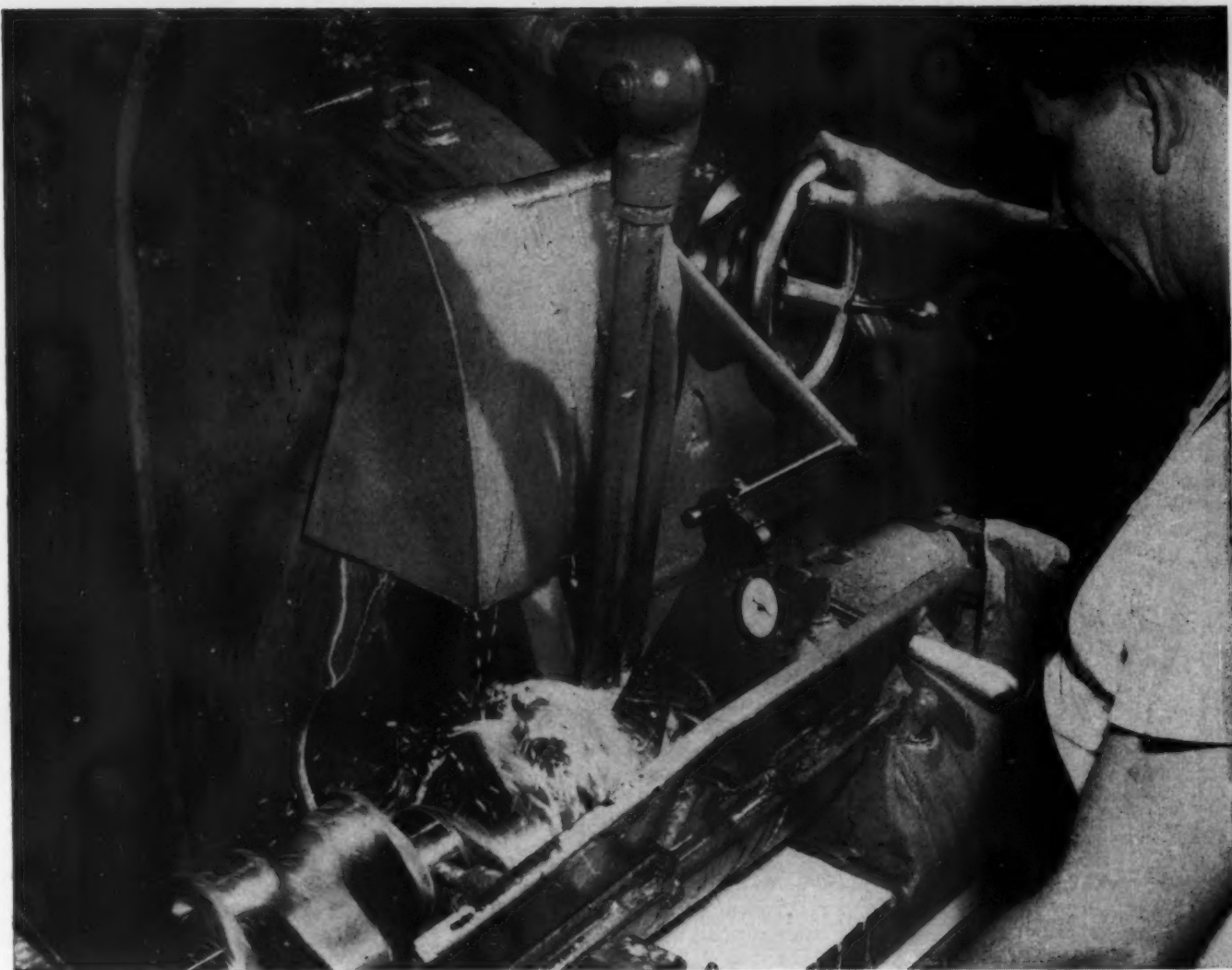
Read your trade journals and purchasing magazines. Their timely articles and advertisements are a constant source of new ideas and of new sources of supply.

2. *Work closely with your suppliers* for quick deliveries. Know some individual in each company, to whom you can address your appeal. Don't ask or expect the impossible, but be able to convey to him the urgent need for prompt shipment. This is where good "public relations" between your company and your supplier will pay big dividends.

Take advantage of modern fast transportation methods. The small extra cost may save you that big penalty for delay.

3. *Keep up to date on government* (Please turn to page 274)





## If a belt could do it better...

Grinding a crankshaft calls for a grinding wheel of definite specifications. But, if it could be done better, faster or more economically...with an abrasive belt, for instance...CARBORUNDUM would be free to recommend the *right* belt impartially. This is because only CARBORUNDUM manufactures a *complete* line of abrasives—and only CARBORUNDUM can make im-

partial recommendation of the *right* abrasive to use in every grinding or cutting operation.

By standardizing on abrasives by CARBORUNDUM you get the benefit of technical advice on abrasive product use and latest developments in abrasives, without regard to production "limitations" in the abrasive field.

*Only* **CARBORUNDUM**  
TRADE MARK

**makes ALL abrasives to give you the proper ONE**

*"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, N. Y.*

## Here's a Better Bearing!

American Crucible methods, experience, know-how, and equipment save you real money.

Bearings, bushings and wearing parts, machined or rough cast from



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**Money-Back Guarantee  
Of Longer Service And  
Lower Maintenance Cost**

Castings to your patterns—any size, shape or section up to 3,000 lbs. Pattern making, designing and machining.

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BRONZE BAR STOCK**

Round, solid, tubular  
Rough cast or fully machined.  
Cored stock, all sizes (by 1/8" steps) from 1/2" minimum core to 26" O.D. 13" lengths or less. 6 grades of hardness.

Let us quote and make recommendations as to alloys. Simply send blueprints, conditions of operation and other data.

**THE  
AMERICAN CRUCIBLE  
PRODUCTS CO.**

1319 OBERLIN AVE.  
LORAIN, OHIO, U.S.A.

## Every Purchase Is an Emergency

(Continued from page 272)

regulations and know how to handle them. We all battled with priorities and allocations during World War II, and were glad to see them suspended after hostilities ceased. We hope that we would never have to deal with them again. Now, within five years, we must again fight the battle of controls.

Emergency purchases are normal in our business. Why? With a constant in and out of every type vessel—from tug to tanker, cargo vessel to passenger liner, private owned and government owned—it is impossible to stock all material requirements; and with only a few days for completion, every direct purchase for the vessel is an emergency purchase.

But thanks to modern communication and transportation, intelligent use of priorities and allocations, and our many friends in industry and purchasing, the emergencies can be met. The ship *will* sail on schedule.

1 1 1

## Control Pattern Is Based on CMP

(Continued from page 97)

relation to military mobilization are being pushed forward.

This is not offered as criticism, but merely as facts which must be taken into account in assessing the outlook for stringent controls. And if the control actions too harshly affect nondefense industry, there are likely to be recriminations against Government projects not connected with immediate mobilization requirements.

## Imbalance in Manpower

There is a further and even more complicating factor that intrudes into the control picture. The curtailment of civilian production lays off more manpower than military production can immediately absorb. In a major war, the rate of induction into the armed services counterbalances any temporary surplus of manpower, but the months ahead are expected to produce a considerable body of unemployed. These men, though completely sympathetic to the need for mobilization, may find it difficult to understand why they should be jobless.

These issues may become academic within a short time. If full-scale war should break out, all the issues

(Please turn to page 276)

## Users Like THIS BUYERS' GUIDE



## here's what other buyers say...

**Machinery Manufacturer.** "We use this directory exclusively for locating sources of all types of material and machinery used in conjunction with our plant production, construction, and maintenance, and would be at a loss for a source of information without this directory." *Signed—Industrial Engineer*

**Manufacturer of Railway Supplies.** "We use the directory every day, and it is so completely compiled that very little time is lost in finding the necessary information." *Signed Chief Tool and Equipment Engineer*

**Chemical Manufacturer.** "We find this directory is our shortest cut for purchasing information..." *Signed—Plant Buyer*

**Hardware Manufacturer.** "We use this directory continuously and prefer it to all others due to its compactness and easy to find listings." *Signed—Purchasing Agent*

**Seating Equipment Manufacturer.** "We use this directory as the first source of information regarding suppliers as your publication is very handy, and the index is so arranged that it is a pleasure to look up the names of various sources of supply." *Signed—Vice-President*

Direct quotations from signed company letters on file in our New York office.

Thousands of buyers all through industry daily refer to the CONOVER-MAST PURCHASING DIRECTORY. They find that it is the easiest and quickest way to locate sources of equipment, products, and supplies used in industry.

CONOVER-MAST PURCHASING DIRECTORY is complete. Use it regularly—the more you use it the better you'll like it.

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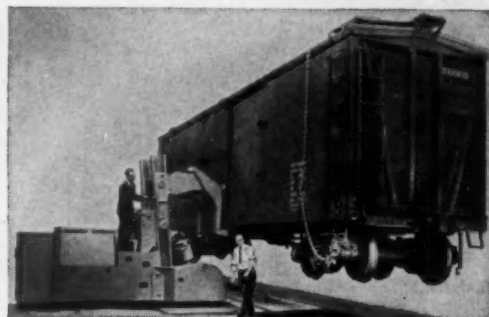
## WHERE DEPENDABILITY IS VITAL ...YOU'LL FIND EXIDE BATTERIES



**COZY CORNER.** Steady, abundant light...like that at home...is among the comforts enjoyed by rail travelers today. On many famous "name trains," Exide Batteries provide power for lighting, air-conditioning and other electric services.



**MOUNTAIN EATER.** Husky, off-the-highway giants take tons of earth and rock at a single bite. In all parts of the country, they are opening up roads to new areas of wealth, knitting the nation closer. Many of these big earth-movers are equipped with Exide Batteries.



**UP GOES 23 TONS,** lifted with no more manual labor than the pull of a lever. Battery-electric industrial trucks have revolutionized materials handling...saving time, cutting costs, bringing other benefits. Thousands are powered by Exide Batteries.



**WEATHER BUCKERS.** Wintry weather is taken in stride by the nation's trucks and buses. Passengers must be carried to their desti-

nations, food and other essentials moved to market. To assure dependable starting, numerous fleets of trucks and buses are Exide equipped.

Every day, in many ways, Exide Batteries are serving you, for there are Exides to suit every storage battery need. They provide motive power for battery-electric industrial trucks, mine locomotives and shuttle-cars. On railroads, Exide Batteries supply power for car lighting, air-conditioning, Diesel locomotive

cranking, signal systems. They perform many tasks on aircraft, ocean vessels...in telephone and telegraph service...in radio and television broadcast...in electric light and power plants. And on millions of cars, trucks and buses, they daily prove that "When it's an Exide, you start."

Information regarding the application of storage batteries for any business or industrial need is available upon request.

# Exide

Reg. Trade-mark U.S. Pat. Off.

**THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32** Exide Batteries of Canada, Limited, Toronto

JANUARY, 1951

*Want Additional Product Information? See Page 19.*

275





**Important reasons why Pheoll**  
**SCREWS • BOLTS • NUTS**  
*Produce More Profit for You*

**MAINTAIN PEAK OUTPUT** with Pheoll precision-made screws, bolts and nuts—they will speed your assembly work and improve product appearance.

**INSURE PRODUCT PERFORMANCE** with Pheoll quality screws, bolts and nuts—standardize on these dependable industrial fasteners.

**HUGE MANUFACTURING FACILITIES** assure rapid production of both standard and special fasteners.

**SINGLE SOURCE OF SUPPLY** for screws, bolts and nuts in different sizes, types and metals.

**OVERNIGHT DELIVERY** to principal cities from centrally-located Pheoll factory and warehouses.

#### FACTS ABOUT Pheoll YOU SHOULD KNOW

- One of the nation's leading producers of industrial fasteners.
- Pheoll products are widely used in part assembly when quality is of prime importance.
- Men who produce Pheoll industrial fasteners are highly trained and experienced craftsmen.
- All products are manufactured under rigid quality control standards.
- Constant product inspection from laboratory metal analysis, through production and final finish is your assurance of precision made, trouble-free screws, bolts and nuts.

Write for this free Bulletin



**Pheoll**  
**MANUFACTURING COMPANY**  
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CHICAGO 30, ILLINOIS  
**SCREWS • BOLTS • NUTS**  
*Industrial Fasteners and Holding Devices*

## Control Pattern Is Based On CMP

(Continued from page 274)

that now seem so confused would immediately be subordinated to the necessities of military campaigning. In the interim, however, there are the conflicting interests of mobilization and civilian production—unpopular tax levies and political pressures—recruitment of certain manpower skills and layoffs of production workers in other industries. These and many other problems confuse the outlook.

But there is one very clear prospect; material controls will be with us for a prolonged period. Only the time-table is in doubt, not the controls themselves.

1 1 1

## Suppliers' Business Health

(Continued from page 80)

ing agent in deciding whether or not to buy from a prospective supplier, supplementing the buyer's knowledge of the supplier's mechanical facilities and production "know-how".

The background of the company and of its chief officers, its lines of production, methods of operation and financing, and manner of paying its bills, are all treated in comprehensive fashion. If any elaboration is needed, the credit agency is in a position to obtain the necessary additional details. In certain instances it is the policy of the concern to refuse to divulge detailed particulars of its financial position. This of itself would seem to call for the utmost caution on the part of the purchasing agent who contemplates placing an order and entrusting his requirements to the supplier whose affairs are being analyzed.

## Must the purchasing agent be an expert accountant?

Of all the varying intellectual attributes required of purchasing agents today, few can exceed in importance a predilection for the basic aspects of accounting and financial analysis. Not only can it produce substantial dividends in our procurement activities, but it is essential if our progress toward a top management position, in or beyond purchasing, is to continue unhampered.

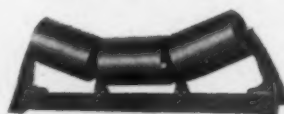
Recently, a prominent and highly competent production man enrolled in an evening class in ad-

(Please turn to page 278)

## Partial List of WHAT WE MAKE

### TO HELP YOU DO A FINE JOB IN MATERIAL HANDLING, PROCESSING AND REDUCING OPERATIONS

We build a complete line but can show only a few units here. Look them over... likely you need one or more now. Whether complete systems, individual units or Replacement Parts... we will be glad to help you speed production—cut costs. May we hear from you?



Troughing and Return Idlers for belts from 14" to 60".



Scraper Flight Conveyors—also steel or wood Apron types.



Vertical and Inclined Bucket Elevators—spaced or continuous buckets.

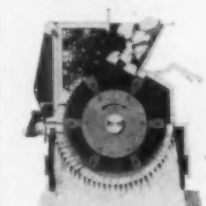


Spiral Conveyors, Flights, Troughs, End Bearings, etc.



A wide range of electric vibrating Feeders, Conveyors, Packers, Screens, Check Valves, etc.

Chains, Sprockets and Attachments.



Crushers, Pulverizers, Shredders and Grinders.



Electric Vibrating Barrel Packers and Packing Tables with decks to provide conveying action.

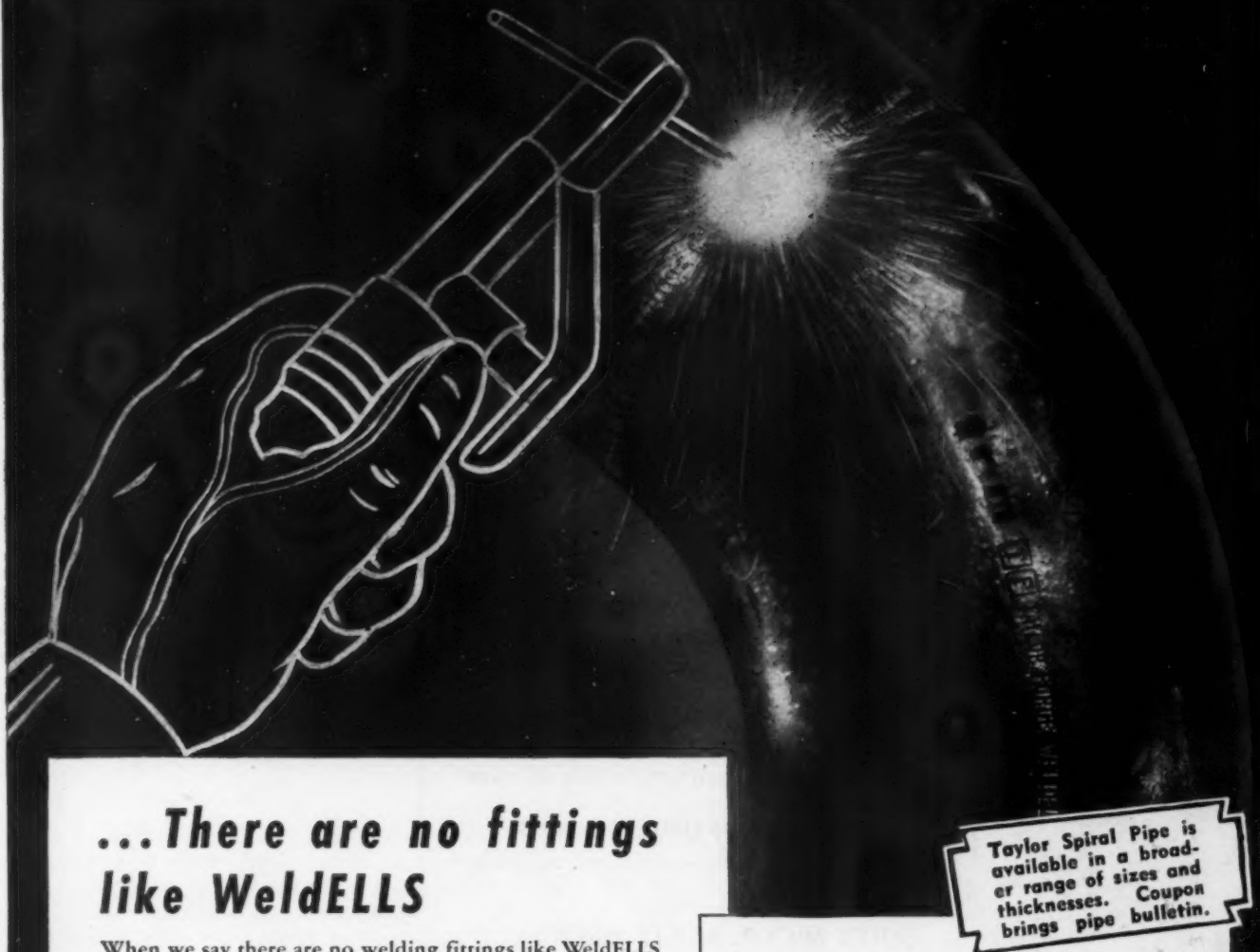
## THE JEFFREY EST. 1877 MANUFACTURING CO.

784 N. Fourth St., Columbus 16, Ohio

Baltimore 2	Cleveland 15	New York 7
Beckley, W. Va.	Denver 2	Philadelphia 3
Birmingham 3	Detroit 13	Pittsburgh 22
Boston 16	Harlan, Ky.	St. Louis 1
Buffalo 2	Houston 2	Salt Lake City 1
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Cincinnati 2	Milwaukee 2	

Jeffrey Mfg. Co. Ltd., Montreal, Canada  
Jeffrey-Gallon (Pty.) Ltd., Johannesburg, S.A.  
The Ohio Malleable Iron Co., Columbus, Ohio  
British Jeffrey-Diamond Ltd., Waketfield, Eng.  
The Gallon Iron Works & Mfg. Co., Gallon, Ohio  
The Kilbourne & Jacobs Mfg. Co., Columbus, O.

# WeldELLS<sup>®</sup>



## ...There are no fittings like WeldELLS

When we say there are no welding fittings like WeldELLS we feel that we are simply repeating the expressed opinions of thousands who know pipe welding.

Often it is the opinion of a designer who recognizes the engineered strength distribution and closely controlled metallurgy of these fittings that are designed by engineers.

Frequently, it is the opinion of a construction superintendent, maintenance man, or welding foreman who has discovered job-speeding, cost cutting features in WeldELLS that are combined in no other fittings.

Sometimes it is the opinion of those whose unusual requirements can only be satisfied in the broader Taylor Forge line; for in certain sizes, weights and materials it can be truthfully said that *there are no fittings BUT WeldELLS!*

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P. O. Box 485, Chicago 90, Illinois

Offices in all principal cities:  
Plants at: Carnegie Pa.; Fontana, Calif.; Hamilton, Ontario, Canada

- ☐ Please send Catalog 484 covering welding fittings and forged steel flanges.
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POSITION \_\_\_\_\_

COMPANY \_\_\_\_\_

STREET ADDRESS \_\_\_\_\_

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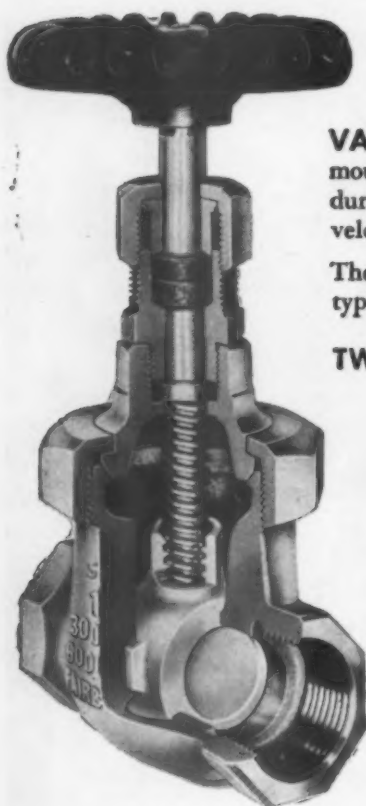
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Designed by EXPERIENCE... Proven by SERVICE

# FAIRBANKS VALVES



**VALUE — QUALITY — FAIRBANKS** synonymous today because of the reputation achieved during a half century of progressive valve development and field service dependability.

The 0260—300 pound Bronze Gate Valve—is a typical valve, a typical value.

## TWO-PIECE UNION BONNET...

Strength, quick easy disassembly, no sliding or scraping of seat between body and bonnet.

## RADIAL SEAT OF UNION BONNET...

Leakproof body-bonnet joint, rigid alignment.

## SOLID NICKEL ALLOY WEDGE...

guided for tight closure, corrosion resistant.

Fig. 0260 BRONZE GATE VALVE—  
NON RISING STEM  
300 lbs. steam working pressure at 550°F.  
(0264—BRONZE GATE VALVE—RISING STEM)

THE

## Fairbanks

COMPANY

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Branches: New York 3 • Pittsburgh 22 • Boston 10 • Rome, Ga.

TRUCKS • CASTERS • DART & PIC UNIONS • VALVES

## Suppliers' Business Health

(Continued from page 276)

vanced accountancy. When asked his reasons for joining a group composed of men many years his junior, he explained that the president of his company had pointed out to him that he was in line for the position of general manager, and eventually for the presidency of his company. He could not hope to be successful in those jobs unless his knowledge of financial management was considerably expanded. In fact, he might be by-passed when the time came for such advancement.

Ability to capably manage the financial affairs of a company is one of the prime requisites demanded of top management personnel today. Without a comprehensive knowledge of modern financial management, and a natural inclination toward that field, we can hardly hope to attain the "seats of the mighty" in a business organization. A determination to make the study of financial statements an important part of our work will stimulate and further this development. It may not only make us more proficient in meeting our purchasing responsibilities, but may facilitate our progress toward the upper rungs of the official ladder in the companies we serve.

1 1 1

## Purchasing For Plant Maintenance

(Continued from page 86)

Electrical and pipe lines of adequate capacity, with controls and valves in good working order.

Floors and machine areas kept free of accumulations of shop dirt and machine waste by systematic removal; hazards of slippery or defective floors avoided or promptly corrected.

Good shop "circulation"; aisles free from obstructions and wide enough for maneuvering trucks, with traffic lanes clearly painted if necessary; floors suited to the type of load and traffic, kept free from breaks, holes, and other hazards to safe handling of loads. Adequate safety devices, including fire protection and personal safety equipment.

Clean washrooms and locker facilities for workers.

Ample parking facilities.

Clean walls and windows.

Machine equipment in efficient running order, including portable

(Please turn to page 280)





## no waiting

If you need specialty steel right away . . . and a mill shipment is too slow . . . or your order not big enough for a mill order . . . check with Crucible. Crucible maintains 23 warehouses conveniently located . . . and completely stocked to meet your requirements. Let Crucible's immediate delivery lighten your inventory load.

There's no need to wonder whether your steel needs will be met on time when the Crucible warehouse nearest you is so well prepared to serve you. Come in and see for yourself. And take full advantage of Crucible's alert metallurgical service . . . it's freely available to you. CRUCIBLE STEEL COMPANY OF AMERICA, Chrysler Building, New York 17, New York.

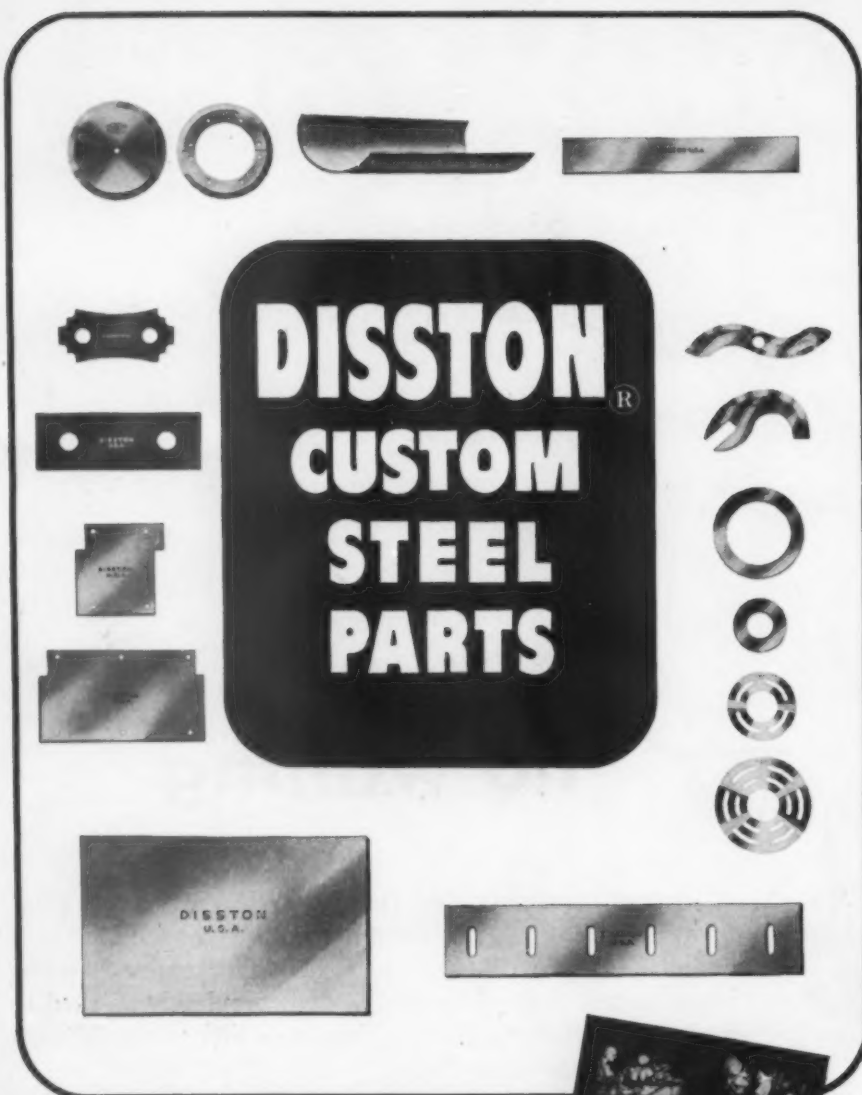
*Complete stocks maintained of  
High Speed Steel . . . AISI Alloy, Machinery, Onyx Spring  
and Special Purpose Steels . . . ALL grades of Tool Steel (in-  
cluding Die Casting and Plastic Die Steel, Drill Rod, Tool  
Bits and Hollow Drill Steel) . . . Stainless Steel (Sheets, Bars  
Wire, Billets, Electrodes)*

# CRUCIBLE

first name in special purpose steels

## WAREHOUSE SERVICE

Branch Offices and Warehouses: ATLANTA • BALTIMORE • BOSTON • BUFFALO • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DENVER  
DETROIT • HOUSTON • INDIANAPOLIS • LOS ANGELES • MILWAUKEE • NEWARK • NEW HAVEN • NEW YORK • PHILADELPHIA • PITTSBURGH  
PROVIDENCE • ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • SYRACUSE • TORONTO, ONT. • WASHINGTON, D. C.



## MADE TO YOUR EXACT SPECIFICATIONS —

Depend on Disston for Custom Steel Parts! Made to your blueprint requirements from Disston Specification Steels. Can be any products which are made from flat steel, machined, hardened, and tempered . . . for cutting or for resisting abrasion. Facilities include abilities to grind plates up to 100" long, 65" wide; circular work from  $1\frac{5}{16}$ " diameter to 36" diameter. Special sizes, bevelling, edging, polishing to order. Write, outlining your problem.



**HENRY DISSTON & SONS, INC.**  
133 Tacony, Philadelphia 35, Pa., U.S.A.  
Canadian Factory, Toronto 3, Ont.



### Send for FREE BOOKLET!

—The story of Disston Custom Steel Parts. Contains complete information on the Disston Custom Steel Parts Plant and Facilities—illustrates and describes typical replaceable heat-treated steel parts. Special section contains valuable how-to-order information. An indispensable reference book for the engineer, designer, purchasing agent. FREE—write for it!

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_  
ZONE \_\_\_\_\_ STATE \_\_\_\_\_

## Purchasing For Plant Maintenance

(Continued from page 278)

power tools and other accessories; provision for efficient flow of materials to and from the machine.

Prompt and competent repair and replacement parts service as required in ordinary operations.

This is a list that might have been compiled from the worker's viewpoint and specifications; it is equally sound from the viewpoint of management that is seeking to operate an efficient plant and to get the maximum output—in both quantity and quality—from its production capacity and equipment. It is, in effect, the definition of a comprehensive maintenance program. Such a program must be supported by an understanding and efficient program of purchasing for maintenance.

1 1 1

## Purchase Budgets For Inventory Control

(Continued from page 118)

the company is operating and to the needs and circumstances of the individual company. Inventory control methods must be adapted to the type of materials involved. The methods of controlling an inventory of perishable products are not adaptable to products capable of prolonged storage.

### Graphic Records

Graphic charts furnish an excellent means for keeping a perpetual inventory record, and are useful as a guide to budgetary practice and purchasing policy. They show at a glance the amount (or value) of material on hand, how fast the material is leaving stock, when the "danger point" is reached and it is time to reorder new material, when and in what quantity the new material is received.

The three charts shown herewith illustrate the application of this method to simple problems in inventory control and purchase budgeting.

Figure 1 is the simple record of a given inventory item, showing quantity on hand and daily disbursements. When stock quantity is depleted to the danger point, the material is reordered. Arrival of the shipment shows stock replenished. Delivery time is approximately two weeks. Should the rate of use increase substantially, it would be

(Please turn to page 282)

# NOW!

all **3** types

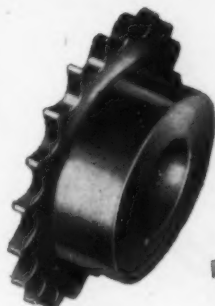
## MORSE ROLLER CHAIN SPROCKETS

FROM DISTRIBUTORS' STOCK



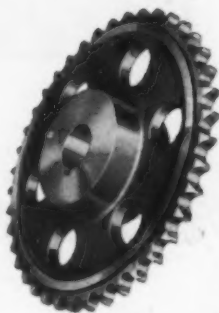
Type A steel  
Plain Plate

**A**



Type B steel  
Hub on One Side

**B**



Type C cast iron  
Hub on Both Sides

**C**

**N**ow, in addition to present sizes of types B and C, Morse makes available from distributors' stock a wide range of sizes in type A steel and an increased number of sizes in type B steel roller chain sprockets.

With three sprocket types—A, B, and C—available in a large number of sizes, distributors can offer you wider, more complete selection of Morse products. You can get direct shipment from their shelves in a matter of minutes.

The new Morse Stock Roller Chain Sprocket Program is another step forward to help Morse distributors give you faster, better service. It pays to specify Morse roller chain sprockets. For complete details, write today for catalog C55-50.

**M=PT**

BASIC FORMULA

Morse *means*  
Power  
Transmission

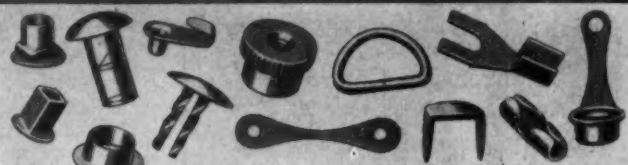
MORSE CHAIN COMPANY

Dept. 111

7601 Central Ave.  
Detroit 8, Michigan

**MORSE**

MECHANICAL  
POWER TRANSMISSION  
PRODUCTS



## Stimpson Metal Articles

We make all kinds of metal articles — Rivets, Eyelets, Terminals, Washers, Snap Fasteners, Stampings, Screw Machine Parts, etc.

Write us today . . . Let us quote on the metal articles you use. Our prices will interest you.

Our General Catalog illustrates over 1,000 metal articles—send for it today.

EDWIN B.  
**STIMPSON**  
COMPANY.

451 PARK AVENUE  
BROOKLYN 5, N.Y.



## Purchase Budgets For Inventory Control

(Continued from page 280)

necessary to raise the "danger point" to avoid running out of stock.

Figure 2 has added to this information a running record of daily use and a projection of stock depletion. When the order is placed, for 8,000 additional units, that is also indicated, showing the actual quantitative coverage that has been provided, with estimated delivery date, but the new amount is not shown as stock on hand until it is received and put into inventory.

Figure 3 plots monthly purchases of an item against actual use, over a three-year period. The two lines are reasonably in accord. Overbuying is apparent in the first half of each year, but is corrected in succeeding months. From this information it was determined that the ideal inventory—the amount at which an excellent rate of turnover could be secured—would be at the level of \$3,300. Actual inventory, not shown on this chart, was found to vary between \$5,500 and \$11,000 during this period, averaging \$7,400, far in excess of need and representing uneconomical practice. Corrective measures of inventory control were applied when this situation was revealed.

Comparative charts showing the trend of sales and of inventory values in the classifications of purchased goods, goods in process, and finished goods, frequently give a valuable picture of conditions in an industry or in a company's operations, providing a sound guide to the revision of inventory and purchase budget policies.

### 1100 PEOPLE STAFF SHELL RESEARCH ORGANIZATION

Scientists and technicians from 135 American and 13 foreign universities and colleges staff the new consolidated laboratory for oil and chemical research, dedicated November 21st by Shell Development Company, research affiliate of Shell Oil Company, in Emeryville, California. According to Dr. M. E. Spagt, president of Shell Development, over 1100 people are employed by the research organization which was started in 1928.

"The accent in this laboratory has always been on ideas," Dr. Spagt said. "We believe that ideas and the progress to which they lead are the best guarantee of security and prosperity for the future. Ideas that started in Shell Development have already produced synthetic glycerine, synthetic ethyl alcohol, synthetic toluene for TNT, the first commercial quantities of 100 octane gasoline, and many other oil-derived products."

# How Industrial Advertising



### FREE — 4 useful booklets for industrial executives

1. "How Industrial Advertising Meets the Demands of Top Management" and
2. "How Industrial Advertising Helps Make Sales"—Each describes 10 performance-facts reports from the advertising-sales records of such companies as E. I. du Pont de Nemours & Co., General Electric Company, Hercules Powder Company, Westinghouse Electric Corporation, Koppers Co., Inc., Standard Conveyor Co. Each tells how a sales situation was analyzed—how advertising was used in these situations, and what results were obtained.
3. "Copy That Clicks"—This is not just about advertising copy. Contains 20 examples that will give you a new viewpoint on advertising objectives; will help your advertising people do a better job.
4. "Mechanized Selling at Work"—Prepared for executives who would like to apply the same concrete, mathematical principles of efficient product production to the improved efficiency of order production.

Write to National Industrial Advertisers Association, 1776 Broadway, New York 19, N. Y. for these useful booklets. They're free.



## *Advertising paved the way for Low Cost Roads!*

Low cost roads are coming in—thanks to an amazing machine with a mouth-filling name: the Single Pass Soil Stabilizer.

Ever hear of it? Road builders never had, either—till *advertising* paved the way. For more than a full year before the product was marketed, advertising got busy to tell them what it was and what it would do.

Result: when the machine was ready for market, the market was ready for it—the first step of the salesman's job was over!

### **A Hard-Boiled Market**

It wasn't easy. For one thing, "soil stabilization" took some explaining. It had to be shown that this new machine would build roads using native soils as the basic material . . . with a minimum of costly commercial materials hauled in from a distance.

"Single pass" was another thing. Contractors had come to think of this kind of road building in terms of an army of equipment . . . plows, discs, harrows going back and forth. Here was *one machine* that promised to do *all* these jobs at once—faster and better.

Well! Now Single Pass Soil Stabilizer made sense! Road builders sat up and took notice. Inquiries poured in—from the people who counted—the "hard-boiled" market had softened.

### **Finding—and selling—the people who count**

Today, soil stabilization has really taken hold. Here in America, in England, West and South Africa, Venezuela, Brazil . . . the big machines are at work . . . spinning out new roads behind them . . . stretching highway dollars with fine pavements of uniform high quality and predetermined strength.

*Advertising* paved the way for salesmen. It told and it *sold*, at far less cost than salesmen could have done it. Another example of industrial advertising doing its most important job—reducing the cost of *selling*!

\* \* \* \*

• This message—one of a series by members of the National Industrial Advertisers Association—is published by MILL & FACTORY to create a wider understanding of industrial advertising and the contribution it is making to American industry.

## **Milwaukee Industrial Marketing Association**



### **A CHAPTER OF THE NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION**

A national organization, comprised of 3,500 members of the 34 local associations of industrial advertising and sales executives—dedicated to greater efficiency in industrial distribution—and lower sales cost.

# WHERE PRECISION COUNTS ... COUNT ON ...



- Standard and Special Ball Thrust Bearings • Angular Contact Ball Bearings • Special Roller Bearings • Ball Retainers • Sleeves • Hardened and Ground Washers • Bushings

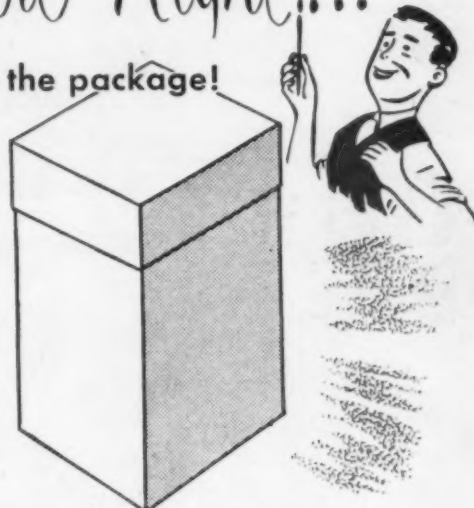
● A survey of your high precision parts requirements by Aetna engineers may bring you important economies. For, here at Aetna, besides top quality ball and roller bearings, you will find today's most advanced facilities for producing an infinite variety of miscellaneous precision parts . . . to whatever hardness or precision finish you need . . . at prices usually below your own production costs. Complete laboratory control and exceptionally strict inspection procedures will guard the quality of your parts from start to finish. Our variety of tools and dies are so extensive that most parts can be produced to fit your requirements without extra expense of special tooling . . . even should you require washer-type parts up to 38" O.D. Send your prints for recommendations and estimates. No obligation.

**AETNA BALL AND ROLLER BEARING COMPANY**  
4600 SCHUBERT AVE. • CHICAGO 39, ILLINOIS

"Well begun, is half done!"

## Start Right....

with the package!



Only Your Package goes home  
with Your Product!

**OLD DOMINION**  
*Box Company, Inc.*  
Plants Throughout the South  
Charlotte, North Carolina

# DETECTO SCALES

There's a precision-accurate Detecto Scale for your specific weighing and counting need. The Detecto helps increase production, yet assures you maximum accuracy by making slightest weight discrepancies immediately visible.

### DETECTO POST-O-METER

Another Detecto Scale that protects your profits. With the Detecto Post-O-Meter, you just press a key and get one precise to-the-penny magnified figure. Thermolastic spring compensates for temperature changes.

Write for literature



**DETECTO • SCALES • INC.**  
MAKERS OF FINE SCALES SINCE 1900  
541P PARK AVENUE • BROOKLYN 5, N. Y.  
SCALE ENGINEERS IN ALL PRINCIPAL CITIES



## TWELFTH EDITION OF STANDARD METAL DIRECTORY RELEASED

Announcement is made by the Atlas Publishing Co., Inc., 425 West 25th St., New York, N. Y., that the 1950 edition of the Standard Metal Directory, 818 pages, is now available; price \$15.

The directory is divided into five sections embracing: iron and steel plants, ferrous and nonferrous metal foundries, metal rolling mills, metal rolling plants, and smelters of nonferrous metals.

It contains more than 10,000 detailed reports on steel mills, foundries, smelters, rolling mills and nonferrous metal plants located in the United States and Canada; plants are listed geographically and alphabetically.

The directory also contains special lists of: Distributors of pig iron, ores, ferro-alloys, coke ovens in the United States, fabricators and distributors of iron and steel products, metal stamping plants, forging manufacturers, die cast plants, metal powder producers and sellers, smelters and refiners of primary and secondary nonferrous metals, storage battery manufacturers, galvanizing plants, dealers in pipe and rails, scrap iron and scrap metal dealers, importers and exporters, dealers in used structural steel, operators of hydraulic presses, etc.

1 1 1

## SPRING BUYER'S GUIDE ISSUED BY HUNTER

A new eight-page bulletin, "Spring Buyer's Guide", designed to aid economical purchasing by reducing to understandable terms the various factors affecting the cost of coil springs, has been published by the Hunter Spring Co., Lansdale, Pa. Intended primarily for the use of purchasing agents and spring buyers, the guide will also be valuable to production men and others who deal with springs.

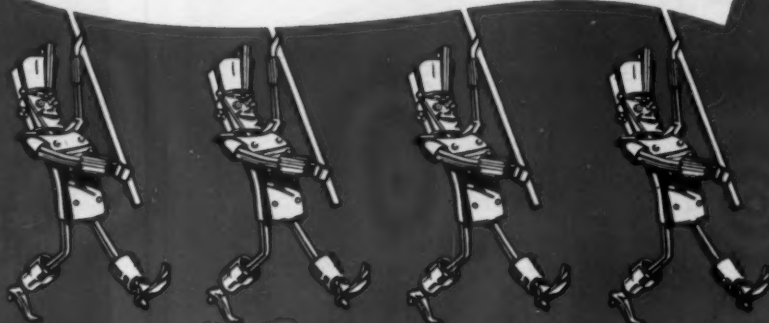
Illustrated by two charts, 13 photographs and 28 line drawings, the bulletin is divided into four sections—Engineering, Manufacturing, Materials, and a glossary of Spring Makers Terms. The first section covers the influence of engineering and resulting specifications on spring cost. Thirteen photographs in the next section show how the spring buyer can affect the manufacturing cost of springs with either more economical or less economical specifications on quantity, coiling, grinding, finishing and inspection.

The third section lists 23 spring materials and the characteristics of each which determine its use for various spring sizes, types and applications. These spring materials include eight steels, four stainless steels, four copper alloys and seven nickel alloys.

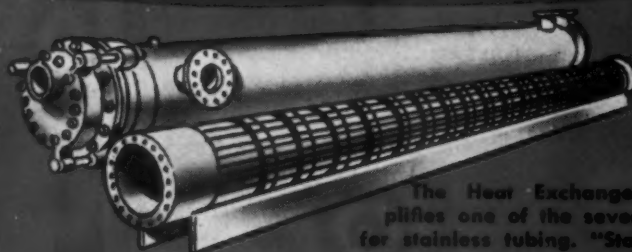
Also included is a check list of the basic factors that are considered in writing spring specifications, as well as nine more spring properties which are sometimes specified. The glossary of spring maker's terms gives 8 terms commonly used in the design, manufacture and specification of coil springs.

Copy of the "Buyers Guide" may be obtained by writing to the Spring Divn., Hunter Spring Co., Lansdale, Pa.

## Keep in Step with— RIGID GOVERNMENT TUBING REQUIREMENTS



SPECIFY **"Standard"**  
for Welded Stainless Steel Tubing



The Heat Exchanger exemplifies one of the several uses for stainless tubing. "Standard's" stainless tubing meets this, as well as many other different requirements for strength, and heat and corrosion resistance.

## Deal with the Specialist among Specialists

A tubing specialist, like other specialists, knows his trade best.

When you deal with "Standard" you deal with a tubing specialist who manufactures millions of feet of tubing every month from stainless and carbon steel—and for

25 years has been serving all types of industry for mechanical and pressure tubing applications.

If you need stainless tubing, be sure you specify "Standard". It pays to deal with the tubing specialist among specialists.

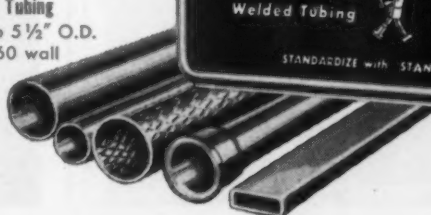
### Stainless Tubing Size and Thickness

¾" O.D. to 3" O.D.  
.028 to .095 wall  
Carbon Steel Tubing  
½" O.D. to 5½" O.D.  
.028 to .260 wall

## THE STANDARD TUBE CO.

Detroit 28,  Michigan  
Welded Tubing Fabricated Parts

STANDARDIZE with STANDARD — It Pays





## For Wiping and Polishing



Wiping precision instruments

Let clean, disposable KIMWIPES\* industrial wiping tissues standardize—and economize—your cleaning operation. Soft, yet strong, they're ideal for cleaning precision tools and instruments. Recommended for use on finely finished surfaces. And highly absorbent KIMWIPES remove dust, dirt, grease and oil—quickly, safely.

The Bureau of Federal Supply stocks Kimwipes size 15" x 18" in all Supply Centers under stock item #53P23121-800.



Polishing machined parts

# Kimwipes

INDUSTRIAL WIPING  
TISSUES



\*T. M. REG. U. S. & CAN. PAT. OFF.

KIMBERLY-CLARK CORPORATION,  
Neenah, Wisconsin  
Please send me Kimwipes literature.

P-151

Name \_\_\_\_\_  
Firm Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

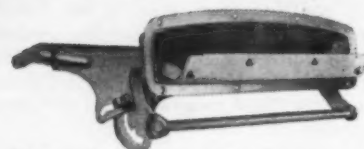
## May WE do these things for YOU?

Perhaps our modern facilities and capable personnel can deliver values you are seeking, such as:

- WHEELS, HUBS, SPINDLES & AXLES
- COMPLETE & SUB-ASSEMBLIES
- STAMPINGS
- MACHINING
- GREY-IRON CASTINGS
- SPECIAL ROLLED SECTIONS

for  
Example

LIGHT GAGE MANUFACTURE



Here is  
a FRAME ASSEMBLY  
for TRUCK COWL VEN-  
TILATOR

also

WHEELS for  
AGRICULTURE & INDUSTRY

We Invite  
Your Inquiries



FRENCH & HECHT  
DIVISION  
KELSEY-HAYES WHEEL COMPANY

1888

72 East River Street, DAVENPORT, IOWA



An Abbott Bearing Ball as large as the Earth would have a deep hardened case 38 times thicker than Earth's sixty mile crust!

Depth of hardness and a mirrorlike, glasshard finish are scientifically engineered into every Abbott Ball to make it shock resistant and capable of efficient ball performance under high load factors. There's a longer lasting Abbott Ball for every bearing application. Send for your complete catalog on Abbott the tougher all round ball.



THE ABBOTT BALL COMPANY  
15 Railroad Place, Hartford 10, Conn.



**P**onderosa Pine... "The Pick o' the Pines!" This is the most popular, most plentiful, multi-purpose soft wood. Versatile! Beautiful! Enduring! A superior material for almost every building use from framing lumber to finest millwork.

You can stock and specify Ponderosa Pine from Association mills with complete confidence. You will get lumber that is manufactured, seasoned, and graded to the high and carefully maintained standards of the Western Pine Association.



For more information about Ponderosa Pine, send for free illustrated 72-page book. Address

**WESTERN PINE ASSOCIATION**  
Yeon Building • Portland 4, Oregon

#### THESE ARE THE WESTERN PINES

#### THESE ARE THE ASSOCIATED WOODS

#### WOODS FROM THE WESTERN PINE REGION



Idaho White Pine, Ponderosa Pine, Sugar Pine

Larch, Douglas Fir, White Fir, Engelmann Spruce, Incense Cedar, Red Cedar, Lodgepole Pine.

**WELL MANUFACTURED  
THOROUGHLY SEASONED  
CAREFULLY GRADED**

# Let *Mack* FIGURE IT IN PLASTICS—



BAB-O scouring powder molded by Mack for B. T. Babbitt, Inc., Plastic holder for leading manufacturers of household cleansers.



When writing, please address inquiries to Department A.

## 3 plants completely equipped to serve you!



DESIGN



MOLD MAKING



MOLDING

- WAYNE, NEW JERSEY
- ARLINGTON, VERMONT
- WATERLOO, P.Q., CANADA

Figured any way you look at it, letting MACK figure on your plastic molding jobs makes good sense. In the business since the early days of the industry, MACK has the experience and the facilities to do the job right. Choice of materials, design and mold making, finishing and delivery are *all* carefully followed through to insure the best results for you. That's why many MACK customers have been with us for a quarter of a century. Inquiries are invited — address Mack Molding Co., Inc., Main Street, Wayne, N. J.

THREE PLANTS

WAYNE,  
NEW JERSEY  
ARLINGTON,  
VERMONT  
WATERLOO,  
P.Q., CANADA

## *Mack* MOLDED EXCELLENCE





# LETTERS . . .

## THE PARTS ARE GREATER . . .

Thank you for sending us advance copy of the article, "Are Purchasing Departments Mobilizing for Shortages."

We note that under item 3, you have a total of 110%, but possibly this percentage is required under present-day conditions.

C. P. Masure, Purchasing Agent  
Continental Industrial Engineers, Inc.  
Chicago, Ill.

● Our chartmaker went astray in his arithmetic. It should have been shown as:

Yes—82%

No—18%

By the time we detected it, it was too late to do anything about it.—Ed.

## BOUQUET

I want to thank you for the copy of the poll on purchasing opinion on the subject. "Are Purchasing Departments Mobilizing for Shortages." I think you have set up a very fine service. It helps when we are working under a strain these days to see what our cohorts are thinking. I trust you will keep up the good work.

J. E. Bilbee, Purchasing Agent  
Stokes Molded Products, Inc.  
Trenton, N. J.

## LOCAL AGENT IS RESPONSIBLE

In commenting on Leo T. Parker's article in the October PURCHASING, our legal advisor points out that the local or special insurance agent, being "our" agent is personally subject to action to recover a loss which is incurred through his false representation, and that cases have been so decided in the courts.

Leslie F. Robbins, Purchasing Agent  
University of Colorado  
Boulder, Colo.

## GRIPE ON GOVERNMENT BUYING

As a distributor we are almost frozen out of the government buying picture. There is an element in Washington that believes in specifying preferred makes of almost everything and confining the U. S. production to those makes. This attitude may be a result of a labor complex but it is certainly not American. The distributor is called on when a few dollars worth of some item is required in an emergency. That is, the distributor is expected to stock and carry merchandise that he can only sell to the Government when an emergency exists.

As you probably know, the Navy and General Supply Services are maintaining their own storeroom in which millions of dollars of equipment is stored at the taxpayer's expense and in many instances becomes obsolete and is sold to whoever will buy it at a fraction of the cost to the taxpayer. There are many other angles to this system that are costly, and we doubt very much whether the cost of

all the labor, rental of buildings, maintenance, and other factors that have been set up by the Government results in any better service than the Government got heretofore by buying from the legitimate dealers as the needs of the Military and Naval services developed.

—An Eastern Distributor

## D. O. DATA

We are endeavoring to corral information concerning the publication of various services offered which would give us complete periodical procedure on inventory control, D. O. order, methods of procurements under such regulations, etc.

Do you have this information available? We wish the names of several services if available for the purpose of checking over to determine which would be most adaptable to our business.

F. J. Meyers, Purchasing Agent  
G. H. R. Foundry  
Dayton, Ohio

● To date we know of no special services offering up-to-the-minute information on the new governmental regulations that are now being put into operation. The best sources so far are the newspapers and the trade press. Then, of course, there is the weekly bulletin of the National Association of Purchasing Agents, which prints parts of the texts of the orders and excellent interpretations of them.

As additional services are announced, we will mention them in our regular news columns.—Ed.

## PURCHASING INSTRUCTION WANTED

It is with considerable interest that we read your magazine each month. In South Africa the principle of central purchasing has as yet not been accorded general acceptance and the practice is, therefore, still in a developmental stage. Because of this we find it of real assistance to be able to draw on the accumulated experience of others longer associated with, and better versed in, this facet of economic activity:

We find especially that we are handicapped by a dearth of suitable literature dealing with the subject of purchasing, and it is in regard to this difficulty that we are writing to you. We feel that possibly you would be able to direct us to suitable sources.

H. J. Koch, Controller of Purchases  
African Explosives & Chemical Industries, Ltd.  
Johannesburg, Union of South Africa

● See "Basic Principles of Purchasing," the 100-page reprint of the series published in PURCHASING.—Ed.

## MODERN OFFICE EQUIPMENT

I'm in the process of preparing an article on office equipment in recent years, its development and the added advantages it gives an organization in the competitive business of today. Any information you could give which would assist me in preparing this article would be greatly appreciated.

Julian Scott  
Green-Brodie  
New York, N. Y.

● See May, June and September issues of PURCHASING for data on the costliness of obsolescence in the office.—Ed.

## HOW TO ANTAGONIZE P.A.s

We would like to secure 60 copies of the reprint of "How to Lose Sales and Influence Purchasing Agents the Wrong Way," by Phil Glanzer, which appeared in the November 1949 issue of PURCHASING.

Mrs. D. G. Green, Librarian  
Armstrong Cork Co.  
Lancaster, Pa.

## SPEAKING LIKENESS

The picture of our good and mutual friend Herb Gaston on the September cover of the valuable PURCHASING Magazine arrived just this afternoon. It is a splendid photograph of Mr. Gaston. In fact, it looks as though he is just about ready to speak. Being included among the list of friends to receive this tribute to Mr. Gaston is very flattering. You can rest assured that it will occupy a prominent place in our office.

Mr. Ebert Bryan who does most of the purchasing for this Company receives PURCHASING magazine regularly. He finds it interesting, impressive, and helpful. In his words, it is a great magazine.

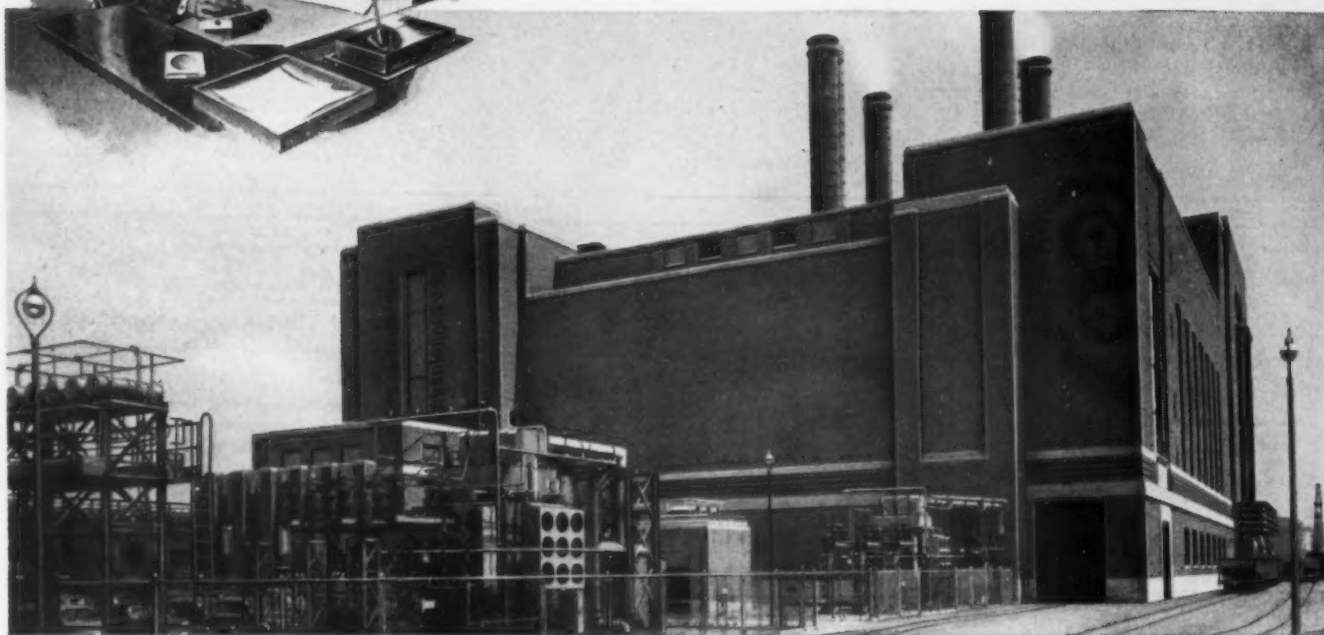
Joseph Brown, President  
Baltimore Brick Company  
Baltimore, Md.

## PURCHASING BUDGETARY CONTROLS

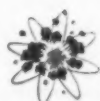
Would you be kind enough to advise me what articles, if any, have appeared in your magazine in the past year or so on the subject of budgetary controls or budgetary procedures as they relate to purchasing? If possible, I should like to secure copies of any such articles.

W. M. Brawster, Accounting  
Ortho Pharmaceutical Corp.  
Raritan, N. J.

● See Chapter No. 9, "The Purchase Budget," from the series "Basic Principles of Purchasing," which was published in PURCHASING and which is now available in booklet form.—Ed.



## —the kind that is mined on the B&O!"



Take a tip from executives who think in terms of fuel economy and dependability of supply. These men design their plants for the efficient coals mined in B&O territory.

These coals, available in wide variety for all needs, lend themselves to mechanized, low-cost mining. As they are located close to

America's industrial heart, transportation costs are moderate. And because their sources are *known and definite*, they can be depended upon—even during wartime—for centuries to come.

Backing its faith in Bituminous, the B&O has made large capital investments in its properties. The result will be even more efficient service for the Bituminous industry and its customers.

### Ask Our Man!

**BITUMINOUS COALS FOR EVERY PURPOSE**  
from modern mines like this—→



# BALTIMORE & OHIO RAILROAD

Constantly doing things—better!

## ANNOUNCE NEW MANGANESE AGE HARDENING ALLOYS

The General Plate Division of Metals & Controls Corp., Attleboro, Mass., announces 715 and 720 manganese age hardening alloys, for varied industrial and jewelry applications. Both are easily fabricated, welded, soldered and age-hardened. They are non-magnetic and their resistance to corrosion is comparable to that of 18% nickel silver.

The color of both alloys is silvery white. High strength and elastic limits are attained with little or no distortion during the hardening operation. The nominal composition of the 715 alloy is 15% manganese, 15% nickel, balance copper; that of the 720 alloy, 20% manganese,

20% nickel, balance copper.

The two alloys are available in either solid form or as composite metals, clad with such metals as gold, silver, copper, brasses, nickel, nickel silvers and others, in the form of sheet wire and tubing. Thickness, Foil, .0005"-.001", up to 4" width; Sheet, .001"-.250", width up to 4"; Bar, .250"-1", up to 4" width.

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## BULLETIN ON NEW CHEMICALS

The New Product Development Department of American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y., announces publication of "Collective Volume II", a compilation of data on several new chemicals which have become available from the company's research laboratories during the last year, and on which separate bulletins have been issued. Some of the chemicals covered are: Beta-substituted propionitriles, 3-substituted propylamines, Dipropionitriles, 2-nitrodiphenylamine, 2-aminobenzenethiol, Antioxidant 2246, Sodium Dicyanamide. Copies of the bulletin are available upon written request.

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**Howard T. Lewis** has been Professor of Marketing at the Harvard Business School since 1927. One of the country's leading authorities on purchasing, he was awarded the Shipman medal in 1940 by the National Association of Purchasing Agents. He is the author of numerous books and articles.

"Industrial Procurement and Marketing" appeared originally in the Harvard Business Review. Addressed to "all executives interested in industrial selling and, in particular, to the industrial marketing director", the article is so significant and timely that *Purchasing Magazine* has obtained permission to give it wider distribution in booklet form.

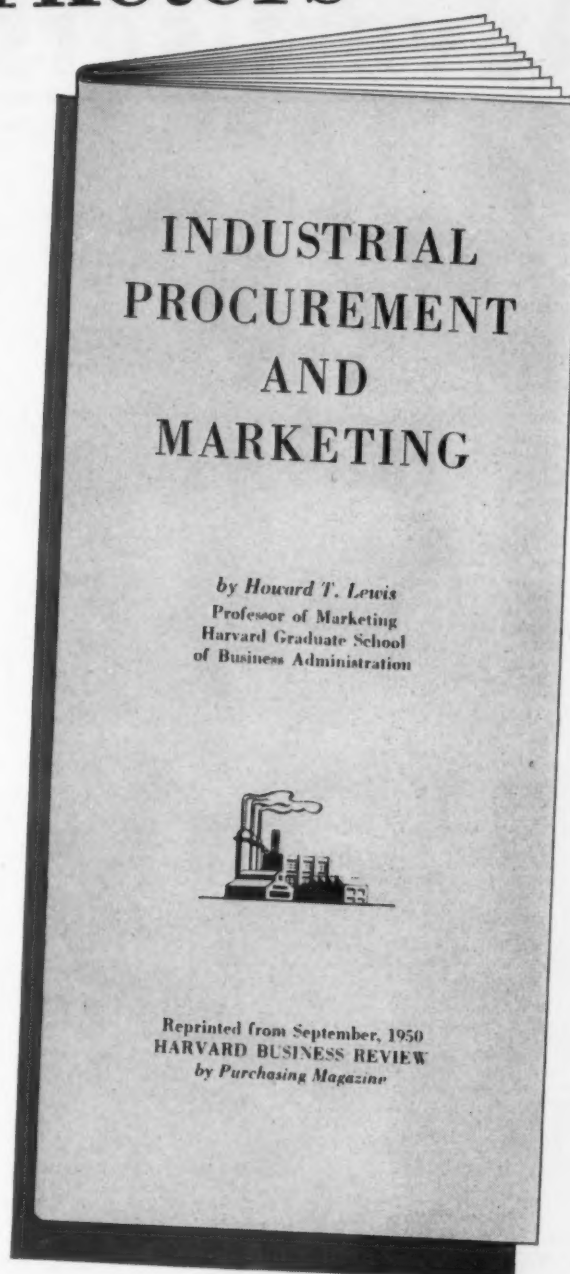
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## IN THIS ISSUE

<b>A</b>	
Abbott Ball Company, The .....	286
Acme Steel Company .....	224
Acushnet Process Company .....	142
Adam Electric Co., Frank .....	149
Aetna Ball & Roller Bearing Co. ....	284
Ahlberg Bearing Company .....	260
Air Express Div., Railway Express ..	55
Agency, Inc. ....	162
Air Reduction Sales Co. & Subsidiaries .....	38
Allegheny Ludlum Steel Corp. ....	250
Allen Mfg. Co. ....	191
Allis-Chalmers Mfg. Co. ....	248
Alloy Steel Products Co. ....	242
American Chain & Cable Co., Inc. ....	274
American Crucible Products Co., The ..	193
American Die Casting Institute .....	172
American Lithofold Corp. ....	48
American Optical Company .....	43
American Screw Company .....	246
American Seating Co. ....	144, 145, 209
American Steel & Wire Company .....	237
Amplex Mfg., Co. ....	244
Arkwright Finishing Co. ....	34
Armour Sandpaper Works .....	38
Associated Spring Corp. ....	139
Atkins & Co., E. C. ....	

<b>B</b>	
Babcock & Wilcox, Refractories Div. ....	133
Bakelite Div. ....	119
Baldwin-Hill Company .....	30
Baltimore & Ohio Railroad, Freight Dept. ....	289
Barnes Co., Inc., W. O. ....	197
Barnes Co., Wallace .....	26
Barnes Co. Ltd., Wallace, The .....	26
Barnes-Gibson-Raymond .....	26
Bassick Co., The .....	296
Bead Chain Mfg. Co. ....	246
Bemis Bro. Bag Co. ....	214
Bendix Aviation Corp., Scintilla Magneto Div. ....	35
Bendix Aviation Corp., Skinner Purifiers Div. ....	256
Best Pencil Company, Richard .....	175
Bethlehem Steel Co. ....	293
Billings & Spencer Co. ....	218
Blake & Johnson Company, The .....	43
Black & Decker Mfg. Co. ....	121
Boorum & Pease Company .....	174
Boston Woven Hose & Rubber Co. ....	52
Bridgeport Brass Co. ....	205
Briggs & Stratton Corp. ....	31
Brighton Screw & Mfg. Co., The .....	136
Bristol Brass Corp. ....	261
Brown Company .....	195
Brown & Sharpe Mfg. Co. ....	32, 33
Bundy Tubing Co. ....	131
Bussmann Mfg. Co. ....	44, 45

<b>C</b>	
Camcar Screw & Manufacturing Company .....	43
Canadian International Trade Fair .....	264
Carborundum Co., The .....	273
Carnegie-Illinois Steel Corp. ....	144, 145
Carpenter Alloy Tube Div. ....	222
Central Screw Company .....	43
Century Electric Company .....	3
Chase Brass & Copper Co., Inc. ....	135
Classified Advertising Section .....	290
Cleveland Container Co., The .....	158
Cleveland Twist Drill Co. ....	223
Colorado Fuel & Iron Corp., Wickwire Spencer Steel Div. ....	247
Colson Corporation, The .....	258
Columbia Steel Company .....	144, 145, 209
<b>CONOVER-MAST PURCHASING DIRECTORY</b>	
Container Corp. of America .....	274
Continental Foundry & Machine Co. ....	240
Continental Rubber Works .....	152
Continental Screw Company .....	43
Continental Steel Corp. ....	203

Crane Company .....	14
Crucible Steel Company of America .....	279
Curtis Pneumatic Machinery Div., Curtis Mfg. Co. ....	235

<b>D</b>	
Darnell Corp., Ltd. ....	208
Detecto Scales, Inc. ....	234
Disston & Sons, Inc., Henry .....	230
Diversey Corp. ....	238
Doehler-Jarvis Corp. ....	3rd Cover
Dravo Corp. ....	252
Dunbar Bros. Co. Div. ....	26

<b>E</b>	
Eberhard-Faber Pencil Co. ....	179
Elastic Stop Nut Corp., of America .....	215
Elco Tool & Screw Corp. ....	43
Electric Auto-Lite Co. ....	213
Electric Storage Battery Co. ....	275
Emerson Electric Mfg. Co. ....	271
Erie Bolt & Nut Co. ....	230
Esleek Mfg. Co. ....	175
Esterbrook Pen Co. ....	177
Eureka Specialty Printing Co. ....	176
Ex-Cell-O Corporation .....	53

<b>F</b>	
Fairbanks Bearings Co. ....	47
Fairbanks Company, The .....	278
Federated Metals Div., Amer. Smelting & Refining Co. ....	267
Fiske Bros. Refining Co., Lubriplate Div. ....	206
Forest City Foundries Co. ....	254
French & Hecht Div., Kelsey-Hayes Wheel Co. ....	286
Fuller Brush Co. ....	266

<b>G</b>	
Gates Rubber Company .....	207
Gaylord Container Corp. ....	54
General Box Company .....	263
General Electric Company	
Apparatus Div. 40, 41, 140, 141, 155, 156	
Chemical Dept. ....	231
Electronics Dept. ....	57
Industrial Vacuum Cleaners .....	132
Georgia-Pacific Plywood & Lumber Co. ....	36
Gibson Co., William D., The .....	26
Globe Steel Tubes Co. ....	229
Goodrich Co., B. F. ....	225
Gould-National Batteries, Inc. ....	187
Graton & Knight Company .....	37
Graybar Electric Co., Inc. ....	64
Great Lakes Steel Corp. ....	117
Grinnell Co., Inc. ....	151

<b>H</b>	
Harrisburg Steel Corp. ....	160
Hart Manufacturing Co. ....	138
Hinde & Dauch Paper Co. ....	27
Hobbs Mfg. Co. ....	268
Hoover Ball & Bearing Co. ....	138
Hoover Company The .....	204
Howell Electric Motors Co. ....	243
Hudson Pulp & Paper Corporation ....	153

<b>I</b>	
Inland Steel Company .....	5
Investment Casting Company .....	230

<b>J</b>	
Jeffery Mfg. Co., The .....	276
Jenkins Bros. ....	4th Cover
Johnson Bronze Co. ....	232

<b>K</b>	
Keasbey & Mattison Co. ....	10
Kex National Service .....	164
Kimberly-Clark Corp. ....	236

<b>L</b>	
Ladish Co. ....	51
Leschen & Sons Rope Co., A. ....	134
Link-Belt Co. ....	11
Liquid Carbonic Corporation, The .....	212
Lubriplate Div., Fiske Bros. Refining Co. ....	206
Lunkenheimer Company .....	199
Lyon Metal Products Inc. ....	61

<b>M</b>	
Mack Molding Co. ....	287
Macwhyte Co. ....	25
Marsh Corp., Jas. P. ....	295
Master Electric Co. ....	49
Master Products Co., The .....	220
McGraw-Hill Directory of Chemicals & Producers .....	252
Micro Switch .....	245
Milwaukee Dustless Brush Co. ....	148
Missouri-Kansas-Texas Lines .....	210
Moore Business Forms, Inc. ....	184
Morris Company, Bert M. ....	167
Morse Chain Company .....	281

<b>N</b>	
National Lock Co. ....	43
National Supply Co., Spang-Chalfant Div. ....	269
National Tube Co. ....	144, 145
New Processing Screw Corp. ....	185
Niagara Blower Company .....	150
Nicholson File Co. ....	18

<b>O</b>	
Oakite Products, Inc. ....	200
Ohio Brass Company .....	161
Ohio Division, Association Spring Corp. ....	26
Ohio Injector Co., The .....	28, 29
Old Dominion Box Co. ....	284
Osborn Mfg. Co. ....	7
Oxford Filing Supply Co. ....	180



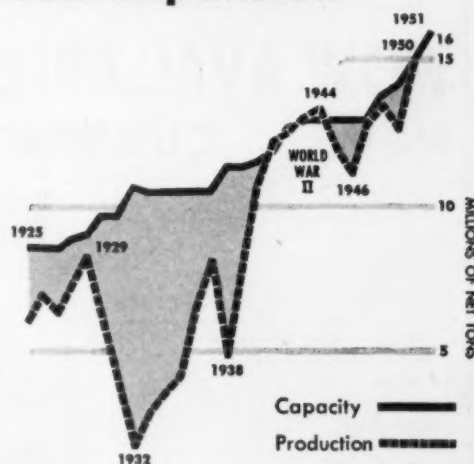
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<b>P</b>	
Page Steel & Wire Div. ....	242
Parker-Kalon Corp. ....	43, 50
Pawtucket Mfg. Co. ....	160
Pennsylvania Flexible Metallic Tubing Co. ....	60
Perkins Machine & Gear Co. ....	272
Pheoll Manufacturing Company ....	43, 276
Porter Company, Inc., H. K. ....	294
Powell Company, William ....	129
Pratt & Whitney Div., Niles-Bement- Pond Co. ....	6
PURCHASING Magazine ....	291
Pyrene Mfg. Co. ....	236

<b>G</b>	
Quaker Rubber Corp. ....	201

<b>R</b>	
Railway Express Agency, Inc., Air Express Div. ....	55
Raymond Mfg. Co. ....	26
Remington Rand, Inc. ....	181
Republic Rubber Div. ....	56
Revere Copper & Brass, Inc. ....	147
Richardson Co., The ....	157
Ridge Tool Co. ....	194
Riegel Paper Corp. ....	59
Riegel Textile Corp. ....	233
Rising Paper Co. ....	180
Roberts Rubber Co., Weldon ....	182
Rockford Screw Products Company ....	43
Rolock, Inc. ....	265
Rome Cable Corp. ....	189
Rust-Oleum Corporation ....	62
Ryerson & Son, Inc., Joseph T. ....	70

<b>S</b>	
Sandvik Steel, Inc. ....	58
Scovill Manufacturing Company ....	43, 268

Screw Research Association ....	43
Security Steel Equipment Corp. ....	183
Set Screw & Mfg. Co. ....	220
Sexauer Mfg. Co., J. A. ....	252
Shakeproof, Inc. ....	43
Sheppard Envelope Co. ....	176
Simmons Fastener Corp. ....	125
Simonds Abrasive Company ....	154
Simonds Saw & Steel Co. ....	239
SKF Industries, Inc. ....	196
Solvay Sales Div., Allied Chemical & Dye Corp. ....	143
Southington Hardware Manufacturing Company, The ....	43
Spang-Chalfant Div., National Supply Company ....	269
Sponge Rubber Products Co. ....	241
Square D Company ....	21
Standard Pressed Steel Co. ....	198
Standard Tube Co. ....	285
Stanley Electric Tool Div. ....	8
Stanley Works, The ....	200
Starrett Co., The L. S. ....	39
Sterling Bolt Co. ....	259
Sterling Electric Motors, Inc. ....	264
Stimpson Co., Inc. Edwin ....	281
Sun Oil Co. ....	16, 17
Superior Foundry, Inc. ....	216
Superior Steel Corp. ....	137
Sylvania Electric Products, Inc. ....	251

<b>T</b>	
Taylor Fibre Co. ....	9
Taylor Forge & Pipe Works ....	277
Tennessee Coal, Iron & Railroad Company ....	144, 145, 209
Texas Company ....	2nd Cover
Thermoid Co. ....	257
Thompson & Son Company, The Henry G. ....	228
Threadwell Tap & Die Co. ....	262
Timken Roller Bearing Co. ....	253
Torrington Company, The ....	217
Townsend Company ....	146
Tri-Lok Company ....	252
Trumbull Electric Mfg., Co. ....	221
Tube Reducing Corp. ....	42

<b>U</b>	
Uarco, Inc. ....	178
Udylite Corp. ....	219
Union Bag & Paper Corp. ....	249
United States Graphite Company, The ....	12
U. S. Gutta Percha ....	234
U. S. Rubber Company ....	163
United States Steel Export Company .....	144, 145, 209
United States Steel Supply Co. ....	23, 144, 145

<b>V</b>	
Veeder-Root, Inc. ....	192

<b>W</b>	
Wagner Electric Corp. ....	235
Waldes Kohinoor, Inc. ....	227
Wales-Beech Corporation ....	43
Walworth Company ....	63
Webster Company, F. S. ....	173
Wellman Bronze & Aluminum Co. ....	202
West Disinfecting Co. ....	159
Western Pine Association ....	287
Westinghouse Electric Corp. ....	68, 211
Whitney Chain Co. ....	46
Willson Products, Inc. ....	270
Wickwire Spencer Steel Div. of The Colorado Fuel & Iron Corp. ....	247
Wycoff Steel Company ....	158

<b>Y</b>	
Youngstown Sheet & Tube Co. ....	123



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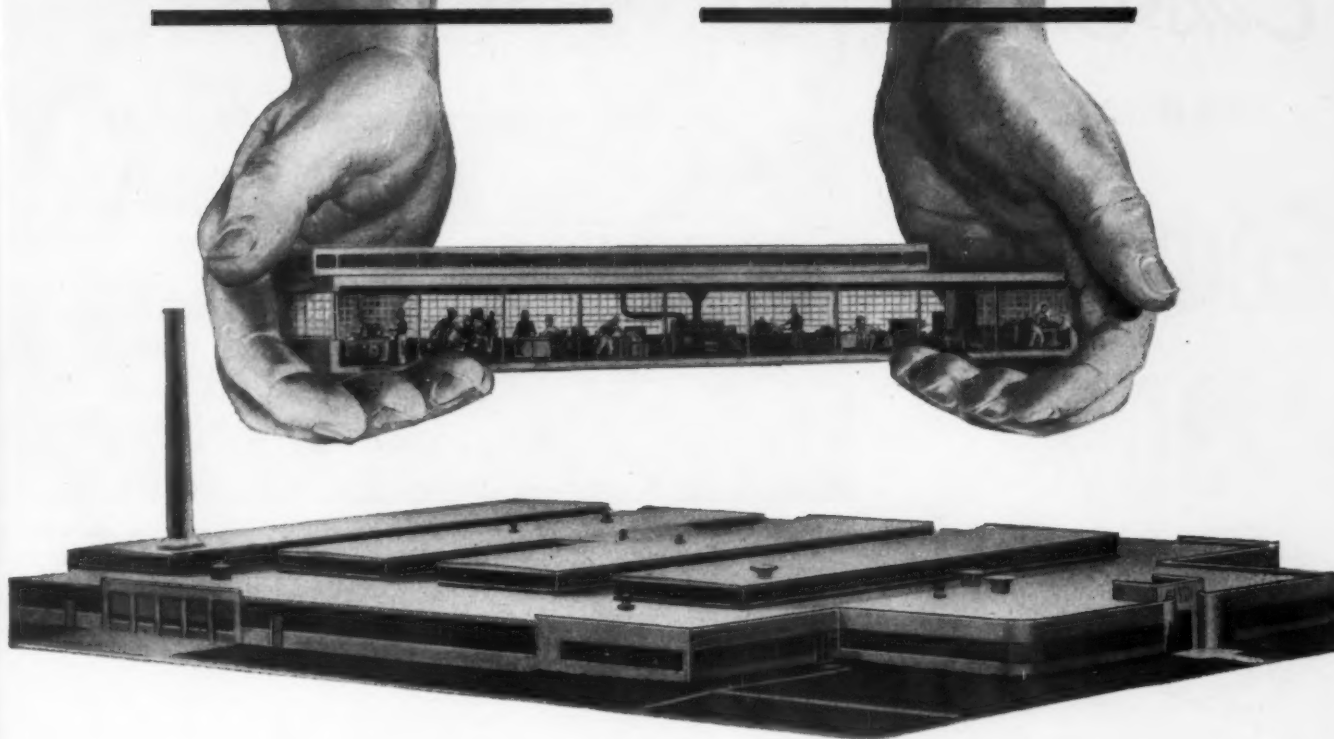
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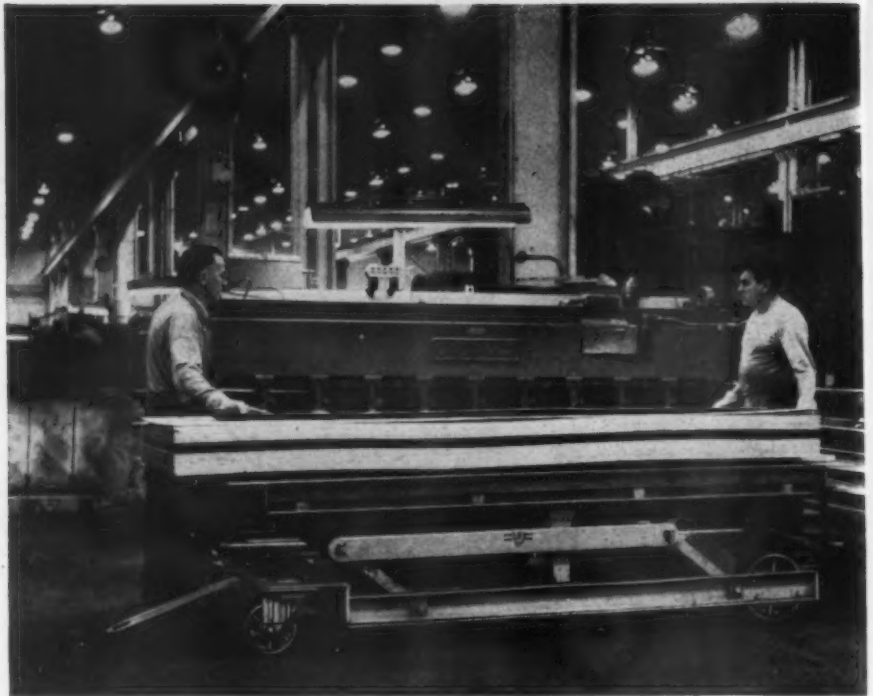
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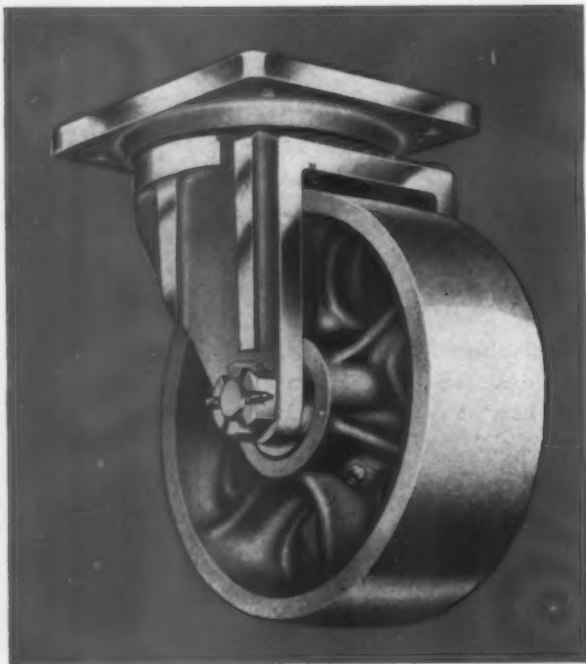
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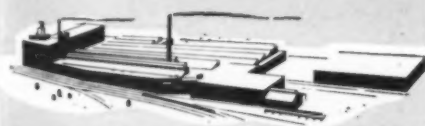
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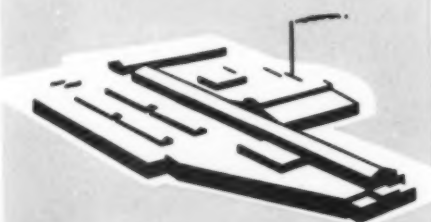
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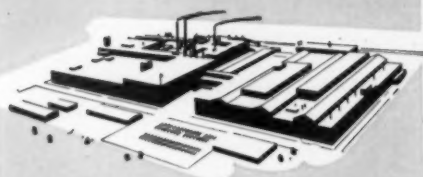
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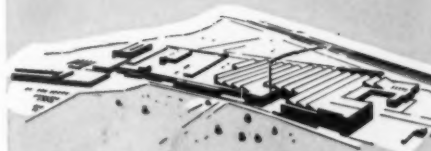
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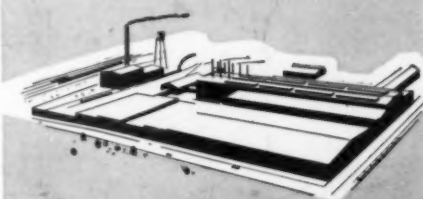
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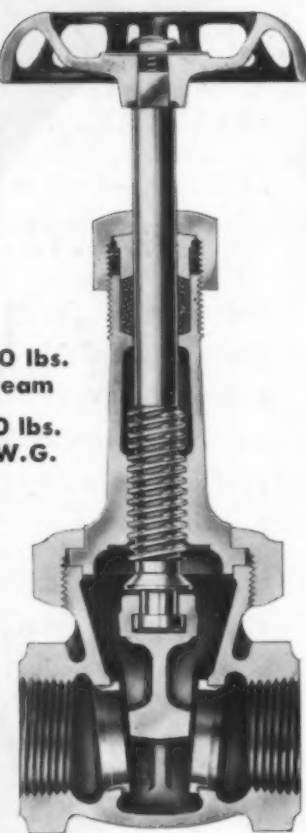
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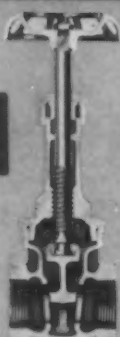
Made in sizes from  $\frac{1}{4}$ " to 2", Fig. 270-U or Fig. 270-UN will provide unequalled economy in any 200 lb. steam, 400 lb. O.W.G. service. Compare performance, especially where conditions are most destructive to valves, as in oil refineries, dye houses, chemical, rubber, and food plants. You'll find there are no other valves like them.



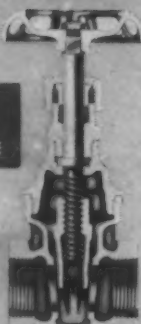
200 lbs.  
Steam

400 lbs.  
O.W.G.

SOLID WEDGE  
SCREW-IN BONNET  
TRAVELING SPINDLE



SOLID WEDGE  
SCREW-IN BONNET  
STATIONARY SPINDLE



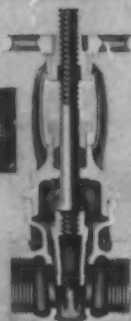
SPLIT WEDGE  
UNION BONNET  
TRAVELING SPINDLE



SPLIT WEDGE  
SCREW-IN BONNET  
TRAVELING SPINDLE



SOLID WEDGE  
OUTSIDE SCREW & YOKE  
RISING SPINDLE



**WRITE FOR THIS FOLDER**

Form 181-B It describes the Fig. 270-U and other popular Jenkins Bronze Gates or, ask your Jenkins Distributor.



**JENKINS**  
LOOK FOR THE DIAMOND MARK  
**VALVES**

TRADE  
JENKIN  
MARK

Jenkins